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SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE

REPORT OF THE SUBSIDIARY BODY FOR SCIENTIFIC AND TECHNOLOGICAL ADVICE ON ITS TENTH SESSION BONN, 31 MAY - 11 JUNE 1999

Addendum

DRAFT DECISION ON GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS BY PARTIES INCLUDED IN ANNEX I TO THE CONVENTION. PART I: UNFCCC REPORTING GUIDELINES ON ANNUAL INVENTORIES

CONTENTS

	Paragraphs	Page
Introduction	1 - 4	2
Draft decision on guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories		3
Annex I* to the draft decision: Guidelines for the preparation of national communications by Parties included in Annex I to the Convention. Part I: UNFCCC reporting guidelines on annual inventories		5
Annex II* to the draft decision: Common reporting format (annex to the UNFCCC reporting guidelines on annual inventories)		17

* Annex reproduced in English only

INTRODUCTION

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its tenth session, decided to forward to the Subsidiary Body for Implementation (SBI) a draft decision on guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories, to be recommended for adoption by the Conference of the Parties (COP) at its fifth session. The SBI, at its tenth session, noted the draft conclusion and agreed to recommend it, jointly with the SBSTA, for adoption by the COP at its fifth session. The draft decision is contained in this document. Annex I to the draft decision contains the UNFCCC reporting guidelines on annual inventories. Annex II to the draft decision contains the common reporting format of these guidelines.

2. The SBSTA advised the SBI to set up a two-year trial period, to commence in early 2000, to assess the UNFCCC reporting guidelines on annual inventories, particularly the common reporting format, with a view to revising them at COP 7, taking into consideration, *inter alia*, experience gained by the Parties and the secretariat, and the input from IPCC. The SBI, following the advice of the SBSTA, agreed to set up the two-year trial period.

3. The SBSTA requested Parties to submit electronically to the secretariat any further technical corrections to the common reporting format by 15 July 1999, so that the text of the guidelines could be completed in time for the fifth session of the COP.

4. Finland, on behalf of the European Community and its member States, Sudan, Switzerland and the United States of America provided technical corrections to the common reporting format in accordance with the mandate of the SBSTA mentioned in paragraph 3 above. The corrections made have not changed the essence or content of the tables of the common reporting format, but rather have improved their layout, consistency and clarity.

Draft decision --/CP.5

Communications from Parties included in Annex I to the Convention: guidelines and schedule

The Conference of the Parties,

Recalling the relevant provisions of the United Nations Framework Convention on Climate Change, in particular, Article 4, Article 10, paragraph 2, and Article 12,

Recalling its decisions 3/CP.1 on preparation and submission of national communications from Parties included in Annex I to the Convention, 4/CP.1 on methodological issues, 9/CP.2 on communications from Parties included in Annex I to the Convention: guidelines, schedule and process for consideration, and 11/CP.4 on national communications from Parties included in Annex I to the Convention,

Recognizing that anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol should be reported in a transparent, consistent, comparable, complete and accurate way,

Noting that the revised guidelines for the preparation of national communications by Parties included in Annex I to the Convention, annexed to decision 9/CP.2, need to be updated to improve the transparency, consistency, comparability, completeness and accuracy of the reported national greenhouse gas inventories and other information,

Noting the ongoing process of improvement in guidance to Parties on the reporting of GHG inventories, in particular the work of the IPCC related to uncertainties and *good practices*,

1. *Decides* to adopt the guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories, contained in the annex to this decision;

2. *Decides* that Parties included in Annex I to the Convention should use the UNFCCC guidelines on annual inventories for reporting inventories due by 15 April each year, beginning in the year 2000;

3. *Invites* Parties included in Annex I to the Convention to submit separately, by 1 July 2001, information to the secretariat on experiences with using the guidelines, in particular the common reporting format, in the years 2000-2001;

4. *Requests* the secretariat to prepare a report on the use of the guidelines, in particular the common reporting format, taking into account, *inter alia*, experiences gained by Parties in using the guidelines, and by the secretariat in processing the common reporting format, and input from the IPCC, for consideration by the SBSTA at its fifteenth session in considering possible revisions to the guidelines; and

5. *Decides* that revisions to these guidelines, particularly the common reporting format, shall be considered by the SBSTA at its fifteenth session with a view to submitting a decision for adoption at COP 7.

Annex I to the draft decision

GUIDELINES FOR THE PREPARATION OF NATIONAL COMMUNICATIONS BY PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

PART I:

UNFCCC REPORTING GUIDELINES ON ANNUAL INVENTORIES

A. Objectives

1. The objectives of the UNFCCC reporting guidelines on annual inventories are:

(a) To assist Annex I Parties in meeting their commitments under Articles 4 and 12 of the Convention and in preparing to meet possible future commitments under Articles 3, 5 and 7 of the Kyoto Protocol;

(b) To facilitate the process of considering annual national inventories and national inventories included in national communications, including the preparation of technical analysis and synthesis documentation; and

(c) To facilitate the process of verification and technical assessment and expert review of the inventory information.

B. Principles and definitions

2. National greenhouse gas inventories, referred to below only as inventories, should be transparent, consistent, comparable, complete and accurate.

3. Inventories should be prepared using comparable methodologies agreed upon by the Conference of the Parties (COP), as indicated in paragraph 7 below, and any *good practices*[1] agreed upon by the COP at a future session.

4. In the context of these UNFCCC reporting guidelines on annual inventories:

Transparency means that the assumptions and methodologies used for an inventory

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[1] The Intergovernmental Panel on Climate Change (IPCC) is currently developing guidance on *good practices* as part of its work related to uncertainties in inventories. This guidance may be available for consideration by the Subsidiary Body for Scientific and Technological Advice (SBSTA) in 2000. Guidance on *good practices* may include, *inter alia*, advice on the choice of methodology, emission factors, activity data, and uncertainties, and on a series of quality assessment and quality control procedures which may be applied during the preparation of inventories.

should be clearly explained to facilitate replication and assessment of the inventory by users of the reported information. The transparency of inventories is fundamental to the success of the process for the communication and consideration of information.

Consistency means that an inventory should be internally consistent in all its elements with inventories of other years. An inventory is consistent if the same methodologies are used for the base and all subsequent years and if consistent data sets are used to estimate emissions or removals from sources or sinks. Under certain circumstances referred to in paragraphs 10 and 11, an inventory using different methodologies for different years can be considered to be consistent if it has been recalculated in a transparent manner, taking into account any good practices.

Comparability means that estimates of emissions and removals reported by Parties in inventories should be comparable among Parties. For this purpose, Parties should use the methodologies and formats agreed by the COP for estimating and reporting inventories. The allocation of different source/sink categories should follow the split of the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, at the level of its summary and sectoral tables.

Completeness means that an inventory covers all sources and sinks, as well as all gases, included in the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, as well as other existing relevant source/sink categories which are specific to individual Parties, and therefore may not be included in the IPCC Guidelines. Completeness also means full geographic coverage of sources and sinks of a Party.[2]

Accuracy is a relative measure of the exactness of an emission or removal estimate. Estimates should be accurate in the sense that they are systematically neither over or under true emissions or removals, as far as can be judged, and that uncertainties are reduced as far as practicable. Appropriate methodologies conforming to guidance on *good practices* should be used to promote *accuracy* in inventories.

C. Scope

5. These UNFCCC reporting guidelines on annual inventories cover the estimation and reporting of greenhouse gas emissions and removals of both annual inventories and inventories included in national communications, as specified by decision 11/CP.4 and other relevant decisions of the COP.

D. Base year

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[2] According to the instruments of ratification, acceptance, approval or accession of the Convention by a given Party.

6. The year 1990 should be the base year for the estimation and reporting of inventories. According to the provisions of Article 4.6 of the Convention and decisions 9/CP.2 and 11/CP.4, the following Annex I Parties that are undergoing the process of transition to a market economy, are allowed to use a base year or a period of years other than 1990, as follows:

Bulgaria:	to use 1988
Hungary:	to use the average of the years 1985 to 1987
Poland:	to use 1988
Romania:	to use 1989
Slovenia:	to use 1986

E. Methods

Methodology

7. Parties shall use the Revised 1996 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories, referred to below as the IPCC Guidelines, to estimate and report on anthropogenic emissions by sources and removals by sinks of greenhouse gases not controlled by the Montreal Protocol. In accordance with the IPCC Guidelines, Parties may use different methods (tiers) included in those guidelines, giving priority to those methods which are believed to produce the most accurate estimates, depending on the data available. In accordance with the IPCC Guidelines, Parties can also use national methodologies which they consider better able to reflect their national situation, provided that these methodologies are compatible with the IPCC Guidelines and are well documented.

8. The IPCC Guidelines offer a default methodology which includes default emission factors and in some cases default activity data. As these default data, factors and assumptions may not always be appropriate for specific national contexts, it is preferable that Parties use their own national emission factors and activity data, where available, provided that they are developed in a manner consistent with any *good practices*, and considered to be more accurate, and the reporting of the emission and removal estimates and their underlying data is transparent.

Good practices

9. When preparing inventories, Parties should apply any *good practices* agreed upon by the COP, in order to improve transparency, consistency, comparability, completeness and accuracy.

Recalculations

10. The purpose of all recalculations should be the improvement of accuracy and or completeness. Recalculations have to ensure consistency of the time-series. The inventories of an entire time-series, including the base year and all subsequent years for which inventories have been reported, should be estimated using the same methodologies, and the underlying activity data and emission factors should be obtained and used in a consistent manner. Where the methodology or manner in which underlying activity data and emission factors are gathered has changed, Parties should recalculate inventories for the base and subsequent years.

11. However, in some cases activity data may be missing for some historical years, including the base year. In this case, emissions or removals for these years may need to be recalculated with alternative methodologies. In these instances, Parties should demonstrate that the time-series is consistent. The alternative methodologies should be documented in a transparent manner, taking into account any *good practices*.

Uncertainties

12. Parties should estimate the uncertainties of their inventories using the best methodologies available to them, taking account of any *good practices*.

F. Reporting

1. General guidance

Estimates of emissions and removals

13. Article 12.1(a) of the Convention requires that each Party shall communicate to the COP, through the secretariat, *inter alia*, a national inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. At a minimum, inventories shall contain information on the following six greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulphur hexafluoride (SF_6). Parties should report emissions and removals of any other greenhouse gases whose 100-year global warming potential (GWP) values have been identified by the IPCC and adopted by the COP. Parties should also provide information on the following indirect greenhouse gases: carbon monoxide (CO), nitrogen oxides (NO_x) and non-methane volatile organic compounds (NMVOCs). Parties are encouraged to provide information on sulphur oxides (SO_x).

14. Greenhouse gas emissions and removals should be presented on a gas-by-gas basis in units of mass with emissions by sources listed separately from removals by sinks, except in cases where it may be technically impossible to separate information on sources and sinks in the areas of land-use, land-use change and forestry. For HFCs and PFCs, emissions should be reported for

each relevant chemical in the category on a disaggregated basis except in cases where paragraph 19 applies.

15. In addition, consistent with decision 2/CP.3, Parties should report aggregate emissions and removals of greenhouse gases, expressed in CO_2 equivalent terms at summary inventory level,[1] using GWP values provided by the IPCC in its Second Assessment Report, referred to below as 1995 IPCC GWP values, based on the effects of greenhouse gases over a 100-year time horizon. A list of these values is given in table 1 at the end of this document. Table 1 will be amended to include any additional greenhouse gases and their 100-year GWP values, once the GWP values have been adopted by the COP.

16. Consistent with decision 2/CP.3, Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical (for example, HFC-134a) and source category in units of mass and in CO_2 equivalents. Parties should make every effort to develop the necessary sources of data for reporting actual emissions. For the source categories where the concept of potential emissions applies, and Parties do not yet have the necessary data to calculate actual emissions, Parties should report disaggregated potential emissions. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability.

17. Parties are strongly encouraged to also report emissions and removals of greenhouse gases for which 100-year GWP values are available, but not yet adopted by the COP. These emissions and removals should be reported separately from national totals. The GWP value and reference should be indicated.

18. In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions, based upon fuel sold to ships or aircraft engaged in international transport, should not be included in national totals, but reported separately. Parties should also report emissions from international aviation and marine bunker fuels as two separate entries in their inventories.

19. Emissions and removals should be reported on the most disaggregated level of each source/sink category, taking into account that a minimum level of aggregation may be required to protect confidential business and military information.

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[1] CO_2 equivalent emissions should be provided at a level of disaggregation similar to summary table 7A of the IPCC Guidelines.

Recalculations

20. Recalculations of previously submitted estimates of emissions and removals as a result of changes in methodologies, changes in the manner in which emission factors and activity data are obtained and used or the inclusion of new sources or sinks, which have existed since the base year but were not previously reported, should be reported for the base year and all subsequent years, up to the year in which the recalculations are made. Recalculations should result in an improvement in the accuracy and completeness of the inventory and ensure the consistency of the time-series. In this regard, Parties should report justifications for these changes. The information on the procedures used for performing the recalculations, changes in the calculation methods, emission factors and activity data used, and inclusion of sources or sinks, should be documented in a transparent manner, indicating the relevant changes in each source or sink category where these changes have taken place.

Completeness

21. Where methodological or data gaps in inventories exist, information on these gaps should be presented in a transparent manner. Parties should clearly indicate the sources and sinks not considered in their inventories but included in the IPCC Guidelines, and explain the reason for the exclusion. In addition, Parties should use the standard indicators presented below to fill the blanks in all the tables of an inventory. This approach facilitates assessment of the completeness of an inventory. The standard indicators are as follows:

(a) "NO" (not occurring) for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/sink category within a country;

(b) "NE" (not estimated) for existing emissions by sources and removals by sinks of greenhouse gases which have not been estimated. Where "NE" is used in an inventory for emissions or removals of CO_2, N_2O, CH_4, HFCs, PFCs, or SF_6, the Party should indicate, using the completeness table of the common reporting format, why emissions could not be estimated;

(c) "NA" (not applicable) for activities in a given source/sink category that do not result in emissions or removals of a specific gas. If categories in the common reporting format for which "NA" is applicable are shaded, they do not need to be filled in;

(d) "IE" (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where "IE" is used in an inventory, the Party should indicate, using the completeness table of the common reporting format, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Party should give the reasons for this inclusion deviating from the expected category;

(e) "C" (confidential) for emissions by sources and removals by sinks of greenhouse

gases which could lead to the disclosure of confidential information, given the provisions of paragraph 19 above; and

(f) "0" for emissions by sources and removals by sinks of greenhouse gases which are estimated to be less than one half the unit being used to record the inventory table, and which therefore appear as zero after rounding. The amount should still be included in the national totals and any relevant subtotals.[4,5] In the sectoral background tables of the common reporting format Parties should provide data as detailed as methods allow.

22. If Parties estimate emissions and removals from country-specific sources or sinks, or of gases, which are not part of the IPCC Guidelines, they should explicitly describe what source/sink categories or gases these are, as well as what methodologies, emission factors and activity data have been used for their estimation.

Verification[6]

23. In accordance with the IPCC Guidelines, and for verification purposes, Parties should compare their national estimates of carbon dioxide emissions from *fuel combustion* with those estimates obtained using the IPCC reference approach, and report on them in annual inventories. Parties are also encouraged to report on any peer review of their inventory conducted nationally.

Uncertainties[7]

24. When reporting greenhouse gas emission and removal inventory data, the level of uncertainty associated with these data and their underlying assumptions should be indicated. The methodologies used for estimating uncertainties should be reported in a transparent manner. Parties are encouraged to report quantitative information on uncertainties where this is available.

Adjustments

25. Inventories are to be reported without adjustments related, for example, to climate

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[4] The level of detail appropriate to very small source/sink categories is under consideration by the IPCC in its work on *good practices* and Parties should use any guidance which is subsequently agreed by the COP.

[5] With this procedure it is possible that sums of all sectoral tables will differ slightly from sums of summary tables because of rounding effects.

[6] The SBSTA may wish to consider this issue when more data are available or on completion of the development of guidance on *good practices* by the IPCC and, as appropriate, expand this section in any subsequent revisions to these guidelines.

[7] More rigorous requirements for reporting uncertainties may be adopted by the COP once the ongoing work of the IPCC on this matter is completed.

variations or trade patterns of electricity. If Parties, in addition, carry out such adjustments to inventory data, they should be reported separately and in a transparent manner, with clear indications of the method followed.

26. Adjustments are regarded as important information in relation to the monitoring of emission and removal trends and the performance of national policies and measures. Individual Parties may choose whether adjustments are applied, in addition to reporting unadjusted inventory data, and if so, indicate which methods are chosen. Parties are further encouraged to share with others their experience with the application of adjustments.

2. Common reporting format

27. Parties shall submit annually to the Conference of the Parties, through the secretariat, the information required under the common reporting format as contained in the annex to these guidelines. This information shall be submitted on an annual basis for the last but one year prior to the year of submission, in accordance with paragraph 5. It should be formally submitted in both electronic form and hard copy. The common reporting format is part of the national inventory report referred to in section 3 below.

28. The common reporting format is a standardized format for reporting estimates of greenhouse gas emissions and removals and other relevant information. It will be provided to Parties by the secretariat and will also be available on the UNFCCC Web site. The common reporting format allows for the improved handling of electronic submissions and facilitates the processing of inventory information and the preparation of useful technical analysis and synthesis documentation.

29. The common reporting format consists of:

(a) Summary and sectoral tables;

(b) Sectoral background data tables for reporting of aggregate emission factors and activity data;

(c) The IPCC worksheet 1-1 containing estimates of CO_2 emissions from fuel combustion using the IPCC reference approach and a table for comparing estimates under this reference approach with national estimates, as well as providing explanations of any significant differences;

(d) Tables for reporting, *inter alia*, aggregate CO_2 equivalent emissions and removals, recalculations, completeness of the inventory, uncertainty, feedstocks and non-energy use of fuels, international bunkers and multilateral operations, emission trends, and a check-list of the main inventory information requested by these UNFCCC reporting guidelines on annual inventories.

30. The common reporting format follows the source/sink category split of the IPCC sectoral tables. It provides a minimum set of information on methods, aggregate emission factors, and activity data, as well as relevant assumptions that underlie the estimates given in the sectoral tables.

31. The information provided by the common reporting format is aimed at enhancing the comparability and transparency of inventories by facilitating, *inter alia*, activity data and aggregate emission factor cross-comparisons among Parties, and easy identification of possible mistakes, misunderstandings and omissions in the inventories.

3. National inventory report

32. Parties shall submit to the Conference of the Parties, through the secretariat, a national inventory report containing detailed and complete information on their inventories for all years from the base year to the year of the current annual inventory submission, in order to ensure the transparency of the inventory.

33. The national inventory report shall be submitted annually in its entirety to the Conference of the Parties, through the secretariat, in accordance with relevant decisions of the COP, either as a printed document or electronically and should be updated annually to reflect changes. It should include:

(a) The annual inventory information, submitted in accordance with paragraph 27, for all years from the base year[8] to the year of the current annual inventory submission;

(b) Calculation sheets[9] or equivalent database information on detailed inventory calculations in each sector, for all years from the base year to the year of the current annual inventory submission, containing, *inter alia*, disaggregated national emission factors and activity data underlying the estimates;

(c) A description of the specific methodologies and assumptions used in each sector, including an indication of the level of complexity (IPCC tiers) applied and a description of any national methodology used by the Party, as well as information on anticipated future improvements in methodologies;

(d) References or sources of information related to methodologies, emission factors

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[8] According to the provisions of Article 4.6 of the Convention and decisions 9/CP.2 and 11/CP.4, some Parties with economies in transition are allowed to use base years other than 1990, as mentioned in paragraph 7 above.

[9] Calculation sheets or equivalent database information according to the IPCC Guidelines, CORINAIR or national methods.

and activity data, as well as the rationale for their selection;

(e) Information on assumptions and conventions underlying the emission and removal estimates, as well as the rationale for their selection;

(f) Specific information on feedstocks and bunkers:

(i) With regard to possible double counting or non-counting of emissions, Parties should indicate whether feedstocks have been accounted for in the inventory, and if so, how they have been accounted for;

(ii) Regarding the reporting of emissions from bunker fuels, Parties should explain how they distinguish between domestic marine and aviation emissions, which are to be included in national totals, and international bunker emissions;

(g) Information on any recalculations related to previously submitted inventory data, as requested in paragraph 20 above;

(h) Information on uncertainties, as requested in paragraph 24 above;

(i) Information on quality assurance/quality control (QA/QC) procedures implemented;

(j) A separate section clearly identifying changes with respect to the previous years, including the changes in methodologies, sources of information and assumptions, as well as changes in response to the review process;

34. Parties shall publish their national inventory report. Parties may fulfil that obligation by keeping the national inventory report in its entirety on their national Web sites.

G. Record keeping

35. Parties should gather and archive all relevant inventory information for each year, including all disaggregated emission factors, activity data and documentation about how these factors and data have been generated and aggregated for the reporting of the inventory. This information should allow the reconstruction of the inventory, *inter alia*, by the expert review teams. Inventory information should be archived from the base year, including the corresponding data on recalculations applied. The paper trail should enable estimates of emissions and removals to be traced back to the original disaggregated emission factors and activity data. This information should also facilitate the timely process of clarifying inventory data when the secretariat prepares annual compilations of inventories or assesses methodological

issues. Parties are encouraged to collect and gather the information in a single national inventory facility or to, at least, keep the number of facilities to a minimum.

H. Systematic updating of the guidelines

36. Relevant future decisions, once taken by the COP, regarding the reporting of inventories under the Convention should be applied *mutatis mutandis* to these UNFCCC reporting guidelines on inventories, which will be updated accordingly.

I. Language

37. The national inventory report shall be submitted in one of the official languages of the United Nations. Annex I Parties are also encouraged to submit, where relevant, a translation of the national inventory report into English.

Table 1: 1995 IPCC global warming potential (GWP) values [10] based on the effects of greenhouse gases over a 100-year time horizon

Greenhouse gas	Chemical formula	1995 IPCC GWP
Carbon dioxide	CO_2	1
Methane	CH_4	21
Nitrous oxide	N_2O	310
Hydrofluorocarbons (HFCs)		
HFC-23	CHF_3	11700
HFC-32	CH_2F_2	650
HFC-41	CH_3F	150
HFC-43-10mee	$C_5H_2F_{10}$	1300
HFC-125	C_2HF_5	2800
HFC-134	$C_2H_2F_4$ (CHF_2CHF_2)	1000
HFC-134a	$C_2H_2F_4$ (CH_2FCF_3)	1300
HFC-152a	$C_2H_4F_2$ (CH_3CHF_2)	140
HFC-143	$C_2H_3F_3$ (CHF_2CH_2F)	300
HFC-143a	$C_2H_3F_3$ (CF_3CH_3)	3800
HFC-227ea	C_3HF_7	2900
HFC-236fa	$C_3H_2F_6$	6300
HFC-245ca	$C_3H_3F_5$	560
Perfluorocarbons		
Perfluoromethane	CF_4	6500
Perfluoroethane	C_2F_6	9200
Perfluoropropane	C_3F_8	7000
Perfluorobutane	C_4F_{10}	7000
Perfluorocyclobutane	$c\text{-}C_4F_8$	8700
Perfluoropentane	C_5F_{12}	7500
Perfluorohexane	C_6F_{14}	7400
Sulphur hexafluoride	SF_6	23900

[10] As provided by the IPCC in its Second Assessment Report.

Annex II to the draft decision

COMMON REPORTING FORMAT
(Annex to the UNFCCC reporting guidelines on annual inventories)

Notes on the common reporting format

1. This common reporting format consists of summary, reporting and overview tables from the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines), plus newly developed sectoral background tables. Users of IPCC software and of the software for converting from CORINAIR to IPCC formats should be aware that a few small additions have been made to the tables taken from the IPCC Guidelines.

2. Some sectoral background tables call for the calculation of *implied emission factors*. These are top-down ratios between the Party's emissions estimate and aggregate activity data. The implied emission factors are intended solely for purposes of comparison. They will not necessarily be the emission factors actually used in the original emissions estimate, unless of course this was a simple multiplication based on the same aggregate activity data used to calculate the implied emission factor.

3. Consistent with the IPCC Guidelines, memo items, such as emissions estimates from international marine and aviation bunker fuels, should be reported in the appropriate tables, but not included in national totals.

4. Parties should use the documentation boxes provided at the foot of the sectoral background tables to improve clarity.

5. Parties should complete all cells calling for emissions or removals estimates, activity data or emission factors. The following standard indicators should be used where data are not entered.

(a) "NO" (not occurring) for emissions by sources and removals by sinks of greenhouse gases that do not occur for a particular gas or source/sink category within a country;

(b) "NE" (not estimated) for existing emissions by sources and removal by sinks of greenhouse gases which have not been estimated. Where "NE" is used in an inventory for emissions or removals of CO_2, N_2O, CH_4, HFCs, PFCs, or SF_6, the Party should indicate, using the completeness table 9, why emissions could not be estimated;

(c) "NA" (not applicable) for activities in a given source/sink category that do not result in emissions or removals of a specific gas. If categories in the common reporting format for which "NA" is applicable are shaded, they do not need to be filled in.

(d) "IE" (included elsewhere) for emissions by sources and removals by sinks of greenhouse gases estimated but included elsewhere in the inventory instead of the expected source/sink category. Where "IE" is used in an inventory, the Party should indicate using the completeness table 9, where in the inventory the emissions or removals from the displaced source/sink category have been included and the Party should give the reasons for this inclusion deviating from the expected category;

(e) "C" (confidential) for emissions by sources and removals by sinks of greenhouse gases which could lead to the disclosure of confidential information, given the provisions of paragraph 19 of the UNFCCC reporting guidelines on annual inventories;

(f) "0" for emissions by sources and removals by sinks of greenhouse gases which are estimated to be less than one half the unit being used to record the inventory table, and which would therefore appear as zero after rounding. The amount should still be included in the relevant subtotals. In the sectoral background tables, Parties should provide data as detailed as methods allow.

6. Parties should complete the data in the additional information boxes. Where the information called for is inappropriate because of the methodological tier used by the Party, the corresponding cells should be completed using the indicator "NA".

7. Table 5 (the land-use change and forestry sectoral report) should be completed by Parties. The corresponding sectoral background tables 5.A-D follow the IPCC Guidelines and should be completed by Parties that use IPCC default methods. The species and ecosystem types given in the background tables are examples and may be changed by Parties to better describe national circumstances. Parties which do not use the sectoral background tables 5.A-D should complete alternative formats, when they are available.

8. Neither the order nor the notation of columns, rows or cells should be changed in the tables because this will complicate data compilation. Any additions to the existing disaggregation of source and sink categories should be made using the spare rows and columns provided. Additional changes that are made should be clearly indicated both by using a red font and by underlining the information contained in changed cells.

9. Where recalculations of previously submitted data are necessary for the reasons set out in paragraphs 10 and 11 of the UNFCCC reporting guidelines on annual inventories, Parties should complete recalculation table 8a for every year from the base year, and table 8b. Parties should also complete the other tables of the common reporting format for the base year which have changed due to the recalculations.

Annex

LIST OF TABLES

		Page
Summary tables		
Summary 1.A	Summary report for national greenhouse gas inventories (IPCC Table 7A)	21
Summary 1.B	Short summary report for national greenhouse gas inventories (IPCC Table 7B)	24
Summary 2	Summary report for CO_2 equivalent emissions	25
Summary 3	Summary report for methods and emission factors used	26
Energy		
Table 1	Sectoral report for energy	28
	Sectoral background data for energy	
Table 1.A(a)	Fuel combustion activities (Sectoral approach)	30
Table 1.A(b)	CO_2 from fuel combustion activities - Reference approach (IPCC Worksheet 1-1)	34
Table 1.A(c)	Comparison of CO_2 emissions from fuel combustion	35
Table 1.A(d)	Feedstock and non-energy use of fuels	36
Table 1.B.1	Fugitive emissions from solid fuels	37
Table 1.B.2	Fugitive emissions from oil and natural gas	38
Table 1.C	International bunkers and multilateral operations	39
Industrial processes		
Table 2(I)	Sectoral report for industrial processes	40
	Sectoral background data for industrial processes	
Table 2(I).A-G	Emissions of CO_2, CH_4 and N_2O	42
Table 2(II)	Sectoral report for industrial processes - Emissions of HFCs, PFCs and SF_6	44
	Sectoral background data tables for industrial processes	
Table 2(II).C, E	Metal production; Production of halocarbons and SF_6	46
Table 2(II).F	Consumption of halocarbons and SF_6	47
Solvent and other product use		
Table 3	Sectoral report for solvent and other product use	49
Table 3 A-D	Sectoral background data for solvent and other product use	

Agriculture

Table 4	Sectoral report for agriculture	51
	Sectoral background data for agriculture	
Table 4.A	Enteric fermentation	53
Table 4.B(a)	CH_4 emissions from manure management	54
Table 4.B(b)	N_2O emissions from manure management	55
Table 4.C	Rice cultivation	56
Table 4.D	Agricultural soils	57
Table 4.E	Prescribed burning of savannas	58
Table 4.F	Field burning of agricultural residues	59

Land-use change and forestry

Table 5	Sectoral report for land-use change and forestry	60
	Sectoral background data for land-use change and forestry	
Table 5.A	Changes in forest and other woody biomass stocks	61
Table 5.B	Forest and grassland conversion	62
Table 5.C	Abandonment of managed lands	63
Table 5.D	CO_2 emissions and removals from soil	64

Waste

Table 6	Sectoral report for waste	65
	Sectoral background data for waste	
Table 6.A	Solid waste disposal	66
Table 6.C	Waste incineration	66
Table 6.B	Wastewater handling	67

Other tables

Table 7	Overview table for national greenhouse gas inventories	68
Table 8	Recalculation	71
Table 9	Completeness	74
Table 10	Emissions trends	76
Table 11	Check-list of reported inventory information	81

Explanatory note:

In order to avoid changes to the layout of the complex tables of the common reporting format, the tables have not been translated. The common reporting format is a standardized format to be used by Annex I Parties for reporting, electronically, estimates of greenhouse gas emissions and removals and any other relevant information.

- - - - -

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)

Year

(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)				(Gg)					
Total National Emissions and Removals														
1. Energy														
A. Fuel Combustion — Reference Approach[2]														
A. Fuel Combustion — Sectoral Approach[2]														
1. Energy Industries														
2. Manufacturing Industries and														
3. Transport														
4. Other Sectors														
5. Other														
B. Fugitive Emissions from Fuels														
1. Solid Fuels														
2. Oil and Natural Gas														
2. Industrial Processes														
A. Mineral Products														
B. Chemical Industry														
C. Metal Production														
D. Other Production[3]														
E. Production of Halocarbons and SF_6														
F. Consumption of Halocarbons and SF_6														
G. Other														

P Potential emissions based on Tier 1 approach of the IPCC Guidelines A Actual emissions based on Tier 2 approach of the IPCC Guidelines

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach. Where possible, the calculations using the Sectoral approach should be used for estimating national totals. Do not include the results of both the Reference approach and the Sectoral approach in national totals.

[3] Other Production includes Pulp and Paper and Food and Drink Production.

Note: The numbering of footnotes in all tables containing more than one sheet continue to the next sheet. Common footnotes are given only once at the first point of reference.

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)

Year

(Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs[1][2]		PFCs[1][2]		SF_6		NO_x	CO	NMVOC	SO_2
					F	A	F	A	F	A				
	Gg				CO_2 equivalent (Gg)						Gg			
3. Solvent and Other Product Use														
4. Agriculture														
A. Enteric Fermentation														
B. Manure Management														
C. Rice Cultivation														
D. Agricultural Soils	[3]	[3]												
E. Prescribed Burning of Savannas														
F. Field Burning of Agricultural Residues														
G. Other														
5. Land-Use Change and Forestry	[3]	[3]												
A. Changes in Forest and Other Woody Biomass Stocks	[3]	[3]												
B. Forest and Grassland Conversion														
C. Abandonment of Managed Lands	[3]	[3]												
D. CO_2 Emissions and Removals from Soil	[3]	[3]												
E. Other														
6. Waste														
A. Solid Waste Disposal on Land	[4]													
B. Wastewater Handling														
C. Waste Incineration	[4]													
D. Other														
7. Other *(please specify)*														

[1] According to the IPCC Guidelines (Volume 3 Reference Manual, pp. 4.2, 4.87), CO_2 emissions from agricultural soils are to be included under Land-Use Change and Forestry (LUCF). At the same time, the Summary Report 7.A (Volume 1 Reporting Instructions, Tables 2.7) allows for reporting CO_2 emissions or removals from agricultural soils, either in the Agriculture sector, under D. Agricultural Soils, or in the Land-Use Change and Forestry sector under D. Emissions and Removals from Soil. Parties may choose either way to report emissions or removals from this source in the common reporting format, but the way they have chosen to report should be clearly indicated by inserting explanatory footnotes in the corresponding cells of Summary 1.A and Summary 1.B. Double-counting of these emissions or removals should be avoided. Parties should include these emissions or removals consistently in Table 5(a) (Recalculation - Recalculated data) and Table 10 (Emission trends).

[2] Please do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

[3] Note that CO_2 from Waste Disposal and Incineration source categories should only be included if it stems from non-biogenic or inorganic waste streams.

Year

SUMMARY 1.A SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7A)
(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs		PFCs		SF_6		NO_x	CO	NMVOC	SO_2
					P	A	P	A	P	A				
	(Gg)				CO_2 equivalent (Gg)						(Gg)			
Memo Items [1]														
International Bunkers														
Aviation														
Marine														
Multilateral Operations														
CO_2 Emissions from Biomass														

[1] Memo Items are not included in the national totals.

SUMMARY 1.B SHORT SUMMARY REPORT FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 7B)

Year

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2 emissions	CO_2 removals	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
						P	A	P	A	P	A				
		(Gg)				CO_2 equivalent (Gg)[2]						(Gg)			
Total National Emissions and Removals															
1. Energy															
A. Fuel Combustion	Reference Approach[3]														
	Sectoral Approach[3]														
B. Fugitive Emissions from Fuels															
2. Industrial Processes															
3. Solvent and Other Product Use															
4. Agriculture[4]															
5. Land-Use Change and Forestry		[4]	[4]												
6. Waste															
7. Other															
Memo Items:															
International Bunkers															
Aviation															
Marine															
Multilateral Operations															
CO_2 Emissions from Biomass															

P Potential emissions based on Tier 1 approach of the IPCC Guidelines

A Actual emissions based on Tier 2 approach of the IPCC Guidelines

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format.

[2] For verification purposes, countries are asked to report the results of their calculations using the Reference approach and to explain any differences with the Sectoral approach. Where possible, the calculations using the Sectoral approach should be used for estimating national totals. Do not include the results of both the Reference approach and the Sectoral approach in national totals.

[3] See footnote 1 to Summary 1.A.

[4] Please do not provide an estimate of both CO_2 emissions and CO_2 removals. "Net" emissions (emissions - removals) of CO_2 should be estimated and a single number placed in either the CO_2 emissions or CO_2 removals column, as appropriate. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

Year:

SUMMARY 2 SUMMARY REPORT FOR CO_2 EQUIVALENT EMISSIONS

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2[1]	CH_4	N_2O	HFCs	PFCs	SF	Total
	CO_2 equivalent (Gg)						
Total (Net Emissions)[2]							
1. Energy							
A. Fuel Combustion (Sectoral Approach)							
1. Energy Industries							
2. Manufacturing Industries and Construction							
3. Transport							
4. Other Sectors							
5. Other							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
2. Oil and Natural Gas							
2. Industrial Processes							
A. Mineral Products							
B. Chemical Industry							
C. Metal Production							
D. Other Production							
E. Production of Halocarbons and SF$_6$							
F. Consumption of Halocarbons and SF$_6$							
G. Other							
3. Solvent and Other Product Use							
4. Agriculture							
A. Enteric Fermentation							
B. Manure Management							
C. Rice Cultivation							
D. Agricultural Soils[3]							
E. Prescribed Burning of Savannas							
F. Field Burning of Agricultural Residues							
G. Other							
5. Land-Use Change and Forestry[4]							
6. Waste							
A. Solid Waste Disposal on Land							
B. Wastewater Handling							
C. Waste Incineration							
D. Other							
7. Other *(please specify)*							
Memo Items:							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] For CO_2 emissions from Land-Use Change and Forestry the net emissions are to be reported. Please note that for the purposes of reporting, the signs for uptake are always (-) and for emissions (+).

[2] See footnote 1 to Summary 1.A of this common reporting format.

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	Net CO_2 emissions/removals	CH_4	N_2O	Total emissions[5]
Land-Use Change and Forestry	CO_2 equivalent (Gg)					
A. Changes in Forest and Other Woody Biomass Stocks						
B. Forest and Grassland Conversion						
C. Abandonment of Managed Lands						
D. CO_2 Emissions and Removals from Soil						
E. Other[6]						
Total CO_2 Equivalent Emissions from Land-Use Change and Forestry						

Total CO_2 Equivalent Emissions without Land-Use Change and Forestry	
Total CO_2 Equivalent Emissions with Land-Use Change and Forestry	

[5] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report emissions and removals from Land-Use Change and Forestry.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED

Year

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied[1]	Emission factor[2]	Method applied[1]	Emission factor[2]	Method applied[1]	Emission factor[2]	Method applied[1]	Emission factor[2]	Method applied[1]	Emission factor[2]	Method applied[1]	Emission factor[2]
1. Energy												
A. Fuel Combustion												
1. Energy Industries												
2. Manufacturing Industries and Construction												
3. Transport												
4. Other Sectors												
5. Other												
B. Fugitive Emissions from Fuels												
1. Solid Fuels												
2. Oil and Natural Gas												
2. Industrial Processes												
A. Mineral Products												
B. Chemical Industry												
C. Metal Production												
D. Other Production												
E. Production of Halocarbons and SF_6												
F. Consumption of Halocarbons and SF_6												
G. Other												

[1] Use the following notation keys to specify the method applied: D (IPCC default), RA (Reference Approach), T1 (IPCC Tier 1), T1a, T1b, T1c (IPCC Tier 1a, Tier 1b and Tier 1c, respectively), T2 (IPCC Tier 2), T3 (IPCC Tier 3), CA (CORINAIR), CS (Country Specific), M (Model). If using more than one method, enumerate the relevant methods. Explanations of any modifications to the default IPCC methods, as well as information on the prospected methods per source category where more than one method is indicated, and explanations on the country specific methods should be provided in the documentation box of the relevant Sectoral background data table.

[2] Use the following notation keys to specify the emission factor used: D (IPCC default), C (CORINAIR), CS (Country Specific), PS (Plant Specific), M (Model). Where a mix of emission factors has been used, use different notations in one and the same cells with further explanation in the documentation box of the relevant Sectoral background data table.

SUMMARY 3 SUMMARY REPORT FOR METHODS AND EMISSION FACTORS USED

Year

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6	
	Method applied [1]	Emission factor [1]	Method applied [1]	Emission factor [1]	Method applied [1]	Emission factor [1]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]	Method applied [1]	Emission factor [2]
3. Solvent and Other Product Use												
4. Agriculture												
A. Enteric Fermentation												
B. Manure Management												
C. Rice Cultivation												
D. Agricultural Soils												
E. Prescribed Burning of Savannas												
F. Field Burning of Agricultural Residues												
G. Other												
5. Land-Use Change and Forestry												
A. Changes in Forest and Other Woody Biomass Stocks												
B. Forest and Grassland Conversion												
C. Abandonment of Managed Lands												
D. CO_2 Emissions and Removals from Soil												
E. Other												
6. Waste												
A. Solid Waste Disposal on Land												
B. Wastewater Handling												
C. Waste Incineration												
D. Other												
7. Other *(please specify)*												

TABLE 1 SECTORAL REPORT FOR ENERGY
(Sheet 1 of 2)

Year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Energy							
A Fuel Combustion Activities (Sectoral Approach)							
1 Energy Industries							
a Public Electricity and Heat Production							
b Petroleum Refining							
c Manufacture of Solid Fuels and Other Energy Industries							
2 Manufacturing Industries and Construction							
a Iron and Steel							
b Non-Ferrous Metals							
c Chemicals							
d Pulp, Paper and Print							
e Food Processing, Beverages and Tobacco							
f Other *(please specify)*							
3 Transport							
a Civil Aviation							
b Road Transportation							
c Railways							
d Navigation							
e Other *(please specify)*							

TABLE 1 SECTORAL REPORT FOR ENERGY

Year

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
4. Other Sectors							
a. Commercial/Institutional							
b. Residential							
c. Agriculture/Forestry/Fisheries							
5. Other *(please specify)*[1]							
a. Stationary							
b. Mobile							
B. Fugitive Emissions from Fuels							
1. Solid Fuels							
a. Coal Mining							
b. Solid Fuel Transformation							
c. Other *(please specify)*							
2. Oil and Natural Gas							
a. Oil							
b. Natural Gas							
c. Venting and Flaring							
Venting							
Flaring							
Other *(please specify)*							
Memo Items:[2]							
International Bunkers							
Aviation							
Marine							
Multilateral Operations							
CO_2 Emissions from Biomass							

[1] Include military fuel use under this category.

[2] Please do not include in energy totals.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Fuel Combustion Activities - Sectoral Approach

(Sheet 1 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[1]			EMISSIONS		
	Consumption		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)	(3)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A FUEL COMBUSTION								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[2]		
Other Fuels								
1.A.1 Energy Industries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[2]		
Other Fuels								
a. Public Electricity and Heat Production								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[2]		
Other Fuels								
b. Petroleum Refining								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[2]		
Other Fuels								
c. Manufacture of Solid Fuels and Other Energy Industries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[2]		
Other Fuels								

[1] Activity data should be calculated using net calorific values (NCVs) as specified by the IPCC Guidelines. If gross calorific values (GCVs) were used, please indicate this by placing a 'G' in this column.

[2] Accurate estimation of CH_4 and N_2O emissions depends on combustion conditions, technology, and emission control policy, as well as fuel characteristics. Therefore, caution should be used when comparing the implied emission factors.

[3] Carbon dioxide emissions from biomass are reported under Memo Items. The content of the cells is not included in the totals.

Note: For the coverage of fuel categories, please refer to the IPCC Guidelines (Volume 1: Reporting Instructions - Common Reporting Frameworks, section 1.2, p. 1.19). If semi-derived gases (e.g. gas work gas, coke oven gas, blast gas, oxygen steel furnace gas, etc.) are considered, Parties should provide information on the allocation of these derived gases under the above fuel categories (liquid, solid, gaseous, biomass, other fuels) in the documentation box or using a footnote.

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY

Fuel Combustion Activities - Sectoral Approach

(Sheet 2 of 4)

Year :

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS		
	Consumption		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)	(1)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.2 Manufacturing Industries and Construction								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						[3]		
a. Iron and Steel								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						[3]		
b. Non-Ferrous Metals								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						[3]		
c. Chemicals								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						[3]		
d. Pulp, Paper and Print								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						[3]		
e. Food Processing, Beverages and Tobacco								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						[3]		
f. Other (please specify)								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass								
Other Fuels						[3]		

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Fuel Combustion Activities - Sectoral Approach

(Sheet 3 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS [1]			EMISSIONS		
	Consumption		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)	(1)	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.3 Transport								
Gasoline								
Diesel								
Natural Gas								
Solid Fuels								
Biomass								
Other Fuels *(please specify)*						[1]		
a. Civil Aviation								
Aviation Gasoline								
Jet Kerosene								
b. Road Transportation								
Gasoline								
Diesel Oil								
Natural Gas								
Biomass						[1]		
Other Fuels *(please specify)*								
c. Railways								
Solid Fuels								
Liquid Fuels								
d. Navigation								
Coal								
Residual Oil								
Gas/Diesel Oil								
Other Fuels *(please specify)*								
e. Other Transportation								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								

TABLE 1.A(a) SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Fuel Combustion Activities - Sectoral Approach

(Sheet 4 of 4)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	AGGREGATE ACTIVITY DATA		IMPLIED EMISSION FACTORS[2]			EMISSIONS		
	Consumption		CO_2	CH_4	N_2O	CO_2	CH_4	N_2O
	(TJ)	[1]	(t/TJ)	(kg/TJ)	(kg/TJ)	(Gg)	(Gg)	(Gg)
1.A.4 **Other Sectors**								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[1]		
Other Fuels								
a. Commercial/Institutional								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[1]		
Other Fuels								
b. Residential								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[1]		
Other Fuels								
c. Agriculture/Forestry/Fisheries								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[1]		
Other Fuels								
1.A.5 **Other** *(Not elsewhere specified)*[3]								
Liquid Fuels								
Solid Fuels								
Gaseous Fuels								
Biomass						[1]		
Other Fuels								

[1] Include military fuel use under this category

Documentation box:

TABLE 1.A(b) SECTORAL BACKGROUND DATA FOR ENERGY Year

CO_2 from Fuel Combustion Activities - Reference Approach (IPCC Worksheet 1-1)

(Sheet 1 of 1)

FUEL TYPES			Production	Imports	Exports	International Bunkers	Stock Change	Apparent consumption	Conversion factor [1] (TJ/Unit)	Apparent consumption (TJ)	Carbon emission factor (t C/TJ)	Carbon content (Gg C)	Carbon stored (Gg C)	Net carbon emissions (Gg C)	Fraction of carbon oxidised	Actual CO_2 emissions (Gg CO_2)
Liquid Fossil	Primary Fuels	Crude Oil														
		Orimulsion														
		Natural Gas Liquids														
	Secondary Fuels	Gasoline														
		Jet Kerosene														
		Other Kerosene														
		Shale Oil														
		Gas/Diesel Oil														
		Residual Fuel Oil														
		LPG														
		Ethane														
		Naphtha														
		Bitumen														
		Lubricants														
		Petroleum Coke														
		Refinery Feedstocks														
		Other Oil														
Liquid Fossil Totals																
Solid Fossil	Primary Fuels	Anthracite [2]														
		Coking Coal														
		Other Bit. Coal														
		Sub-bit. Coal														
		Lignite														
		Oil Shale														
		Peat														
	Secondary Fuels	BKB & Patent Fuel														
		Coke Oven/Gas Coke														
Solid Fuel Totals																
Gaseous Fossil	Natural Gas (Dry)															
Total																
Biomass total																
	Solid Biomass															
	Liquid Biomass															
	Gas Biomass															

[1] To convert quantities expressed in natural units to energy units, use net calorific values (NCV). If gross calorific values (GCV) are used in this table, please indicate this with a footnote.

[2] If Anthracite is not separately available, include with Other Bituminous Coal.

TABLE 1.A(c) COMPARISON OF CO_2 EMISSIONS FROM FUEL COMBUSTION

Year :

(Sheet 1 of 1)

FUEL TYPES	Reference approach		National approach [1]		Difference [2]	
	Energy consumption (PJ)	CO_2 emissions (Gg)	Energy consumption (PJ)	CO_2 emissions (Gg)	Energy consumption (%)	CO_2 emissions (%)
Liquid Fuels (excluding international bunkers)						
Solid Fuels (excluding international bunkers)						
Gaseous Fuels						
Other [3]						
Total [3]						

[1] "National approach" is used to indicate the approach (if different from the Reference approach) followed by the Party to estimate its CO_2 emissions from fuel combustion reported in the national GHG inventory.

[2] Difference of the Reference approach over the National approach (i.e. difference = 100% x (RA-NA)/NA), where NA = National approach and RA = Reference approach).

[3] Emissions from biomass are not included.

Note: In addition to estimating CO_2 emissions from fuel combustion by sector, Parties should also estimate these emissions using the IPCC Reference approach, as found in the IPCC Guidelines, Worksheet 1-1(Volume 2: Workbook). The Reference approach is to assist in verifying the sectoral data. Parties should also complete the above tables to compare the alternative estimates, and if the emission estimates lie more than 2 percent apart, should explain the source of this difference in the documentation box provided.

Documentation box:

TABLE 1.A(d) SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Feedstocks and Non-Energy Use of Fuels

(Sheet 1 of 1)

FUEL TYPE [1]	ACTIVITY DATA AND RELATED INFORMATION		IMPLIED EMISSION FACTOR	ESTIMATE	Additional information [4]	
	Fuel quantity (TJ)	Fraction of carbon stored	Carbon emission factor (t C/TJ)	of carbon stored in non-energy use of fuels (Gg C)	C is not emitted (Gg C eq.)	Subtracted from *(specify source category)*
Naphtha [2]						
Lubricants						
Bitumen						
Coal Oils and Tars (from Coking Coal)						
Natural Gas [2]						
Gas/Diesel Oil [2]						
Butane [2]						
Ethane [2]						
Other *(please specify)*						

[1] Where fuels are used in different industries, please enter in different rows.

[2] Enter these fuels when they are used as feedstocks.

[3] The fuel lines continue from the table to the left.

Note: The table is consistent with the IPCC Guidelines. Parties that take into account the emissions associated with the use and disposal of these feed-stocks could continue to use their methodologies, and provide explanation notes in the documentation box below.

Documentation box: A fraction of energy carriers is stored in such products as plastics or asphalt. The non-stored fraction of the carbon in the energy carrier or product is oxidized, resulting in carbon dioxide emissions, either during the use of the energy carriers in the industrial production (e.g. fertilizer production), or during the use of the products (e.g. solvents, lubricants), or in both (e.g. monomers). To report associated emissions use the above table, filling an extra "Additional information" table, as shown below.

Associated CO2 emissions (Gg C)	Allocated under *(Specify source category)* [5]

[5] e.g. Industrial Processes, Waste Incineration, etc.

TABLE 1.B.1 SECTORAL BACKGROUND DATA FOR ENERGY

Year :

Fugitive Emissions from Solid Fuels

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR		EMISSIONS	
	Amount of fuel produced[1] (Mt)	CH_4 (kg/t)	CO_2 (kg/t)	CH_4 (Gg)	CO_2 (Gg)
1. B. 1. a. **Coal Mining and Handling**					
i. Underground Mines[2]					
Mining Activities					
Post-Mining Activities					
ii. Surface Mines[2]					
Mining Activities					
Post-Mining Activities					
1. B. 1. b. **Solid Fuel Transformation**					
1. B. 1. c. **Other** *(please specify)*[3]					

Additional information[4]

Description	Value
Amount of CH_4 drained (recovered) and utilized or flared (Gg)	
Number of active underground mines	
Number of mines with drainage (recovery) systems	

[4] For underground mines

[1] Use the documentation box to specify whether the fuel amount is based on the run-of-mine (ROM) production or on the saleable production.

[2] Emissions both for Mining Activities and Post-Mining Activities are calculated with the activity data in lines Underground Mines and Surface Mines respectively.

[3] Use the "Other" rows to enter any other solid fuel related activities resulting in fugitive emissions, such as emissions from abandoned mines and waste piles.

Note: There are no clear references to the coverage of 1.B.1.b and 1.B.1.c in the IPCC Guidelines. Make sure that the emissions entered here are not reported elsewhere. If they are reported under another source category, indicate this (IE) and make a reference in Table 9 (completeness) and/or in the documentation box.

Documentation box:

TABLE 1.B.2 SECTORAL BACKGROUND DATA FOR ENERGY

Year:

Fugitive Emissions from Oil and Natural Gas

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS		
	Description[1]	Value	CO_2 (kg/PJ)	CH_4 (kg/PJ)[2]	N_2O (kg/PJ)[2]	CO_2 (Gg)	CH_4 (Gg)	N_2O (Gg)
1.B.2.a. Oil[3]								
i. Exploration	*(e.g. number of wells drilled)*							
ii. Production[4]	*(e.g. PJ of oil produced)*							
iii. Transport	*(e.g. PJ of oil loaded and unloaded)*							
iv. Refining / Storage	*(e.g. PJ of refined)*							
v. Distribution of oil products	*(e.g. PJ of oil consumed)*							
vi. Other								
1.B.2.b. Natural Gas								
Exploration								
i. Production[4] / Processing	*(e.g. PJ gas produced)*							
ii. Transmission	*(e.g. PJ gas consumed)*							
Distribution	*(e.g. PJ gas consumed)*							
iii. Other Leakage	*(e.g. PJ gas consumed)*							
a. industrial plants and power stations								
b. residential and commercial sectors								
1.B.2.c. Venting[5]								
i. Oil	*(e.g. PJ oil produced)*							
ii. Gas	*(e.g. PJ gas produced)*							
iii. Combined								
Flaring								
i. Oil	*(e.g. PJ gas consumption)*							
ii. Gas	*(e.g. PJ gas consumption)*							
iii. Combined								
1.B.2.d. Other *(please specify)*[6]								

Additional information

Description	Value
Pipelines length (km)	
Number of oil wells	
Number of gas wells	
Gas throughput[4]	
Oil throughput[4]	
Other relevant information *(specify)*	

[1] In the context of oil and gas production, throughput is a measure of the total production, such as barrels per day of oil, or cubic meters of gas per year. Specify the units of the reported value. Take into account that these values should be consistent with the activity data reported under the production rows of the activity table.

[1] Specify the activity data used and fill in the activity data description column as given in the examples in brackets (i.e., use the document box to specify whether fuel is consumed or lost on the raw material production or on the saleable production). Note cases where more than one variable is used as activity data.

[2] The unit of the implied emission factor depends on the units of the activity data used. The most common unit is given as an example (kg/PJ) but each cell in the table should be specified.

[3] Use the category also to cover emissions from combined oil and gas production fields. Natural gas processing and distribution from these fields should be included under 1.B.2.b.ii and 1.B.2.b.iii, respectively.

[4] If using default emission factors these categories will include emissions from production other than venting and flaring.

[5] If using default emission factors, emissions from Venting and Flaring from all oil and gas production should be accounted for here. Parties using the IPCC software could report these emissions together, indicating so in the documentation box.

[6] For example, fugitive CO_2 emissions from production of geothermal power could be reported here.

Documentation box:

TABLE 1.C SECTORAL BACKGROUND DATA FOR ENERGY

Year :

International Bunkers and Multilateral Operations

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS			EMISSIONS		
	Consumption (TJ)	CO_2 (t/TJ)	CH_4 (kg/TJ)	N_2O (kg/TJ)	CO_2 (Gg)	CH_4 (Gg)	N_2O (Gg)
Marine Bunkers							
Gasoline							
Gas Diesel Oil							
Residual Fuel Oil							
Lubricants							
Coal							
Other (please specify)							
Aviation Bunkers							
Jet Kerosene							
Gasoline							
Multilateral Operations [1]							

Additional information

Fuel consumption	Allocation [2] (percent)	
	Domestic	International
Marine		
Aviation		

[2] For calculating the allocation of fuel consumption, use the sums of fuel consumption by domestic navigation and aviation (Table 1.A(a)) and by international bunkers (Table 1.C).

[1] Parties may choose to report or not report the activity data and emission factors for multilateral operation consistent with the principle of confidentiality stated in the UNFCCC reporting guidelines on inventories. In any case, Parties should report the emissions from multilateral operations, where available, under the Memo Items section of the Summary tables and in the Sectoral report table for energy.

Note: In accordance with the IPCC Guidelines, international aviation and marine bunker fuel emissions from fuel sold to ships or aircraft engaged in international transport should be excluded from national totals and reported separately for informational purposes only.

Documentation box: Please explain how the consumption of international marine and aviation bunkers fuels was estimated and separated from the domestic consumption.

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES

Year

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(kg)			(CO_2 equivalent)				(kg)					
Total Industrial Processes													
A Mineral Products													
1 Cement Production													
2 Lime Production													
3 Limestone and Dolomite Use													
4 Soda Ash Production and Use													
5 Asphalt Roofing													
6 Road Paving with Asphalt													
7 Other *(please specify)*													
B Chemical Industry													
1 Ammonia Production													
2 Nitric Acid Production													
3 Adipic Acid Production													
4 Carbide Production													
5 Other *(please specify)*													
C Metal Production													
1 Iron and Steel Production													
2 Ferroalloys Production													
3 Aluminium Production													
4 SF_6 Used in Aluminium and Magnesium Foundries													
5 Other *(please specify)*													

P = Potential emissions based on Tier 1 approach of the IPCC Guidelines A = Actual emissions based on Tier 2 approach of the IPCC Guidelines. This only applies in sectors where methods exist for both tiers

[1] The emissions of HFCs and PFCs are to be expressed as CO_2 equivalent emissions. Data on disaggregated emissions of HFCs and PFCs are to be provided in Table 2(II) of this common reporting format

TABLE 2(I) SECTORAL REPORT FOR INDUSTRIAL PROCESSES

Year

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	CH_4	N_2O	HFCs[1]		PFCs[1]		SF_6		NO_x	CO	NMVOC	SO_2
				P	A	P	A	P	A				
	(Gg)			CO_2 equivalent (Gg)									
D. Other Production													
1. Pulp and Paper													
2. Food and Drink[2]													
E. Production of Halocarbons and SF_6													
1. By-product Emissions													
Production of HCFC-22													
Other													
2. Fugitive Emissions													
3. Other *(please specify)*													
F. Consumption of Halocarbons and SF_6													
1. Refrigeration and Air Conditioning Equipment													
2. Foam Blowing													
3. Fire Extinguishers													
4. Aerosols/ Metered Dose Inhalers													
5. Solvents													
6. Semiconductor Manufacture													
7. Electrical Equipment													
8. Other *(please specify)*													
G. Other *(please specify)*													

[1] CO_2 from Food and Drink Production (e.g. gasification of wastes) can be of biogenic or non-biogenic origin. Only information on CO_2 emissions of non-biogenic origin should be reported.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES Year :

Emissions of CO_2, CH_4 and N_2O

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS[2]					
	Production/Consumption quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
	Description[1]	kt	t/t	g/GJ	g/GJ	Gg	%	Gg	%	Gg	%
A. Mineral Products											
1. Cement Production	*(e.g. cement or clinker production)*										
2. Lime Production											
3. Limestone and Dolomite Use											
4. Soda Ash Production and Use											
5. Asphalt Roofing											
6. Road Paving with Asphalt											
7. Other *(please specify)*											
Glass Production											
B. Chemical Industry											
1. Ammonia Production[3]											
2. Nitric Acid Production											
3. Adipic Acid Production											
4. Carbide Production											
Silicon Carbide											
Calcium Carbide											
5. Other *(please specify)*											
Carbon Black											
Ethylene											
Dichloroethylene											
Styrene											
Methanol											

[1] Where the IPCC Guidelines provide options for activity data, e.g. cement or clinker for estimating the emissions from Cement Production, specify the activity data used (as shown in the example in brackets) in order to make the choice of emission factor more transparent and to facilitate comparisons of implied emission factors.

[2] Enter cases in which the final emissions are reduced with the quantities of emission recovery, oxidation, destruction, transformation. Adjusted emissions are reported and the quantitative information on recovery, oxidation, destruction, and transformation should be given in the additional columns provided.

[3] To avoid double counting make offsetting deductions from fuel consumption (e.g. natural gas) in Ammonia Production, first for feedstock use of the fuel, and then for a sequestering use of the feedstock.

TABLE 2(I).A-G SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES

Year :

Emissions of CO_2, CH_4 and N_2O

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS			EMISSIONS[2]					
	Production/Consumption Quantity		CO_2	CH_4	N_2O	CO_2		CH_4		N_2O	
	Description[1]	(kt)	(t/t)	(t/t)	(t/t)	(Gg)	(t)	(Gg)	(t)	(Gg)	(t)
C. Metal Production[3]											
1. Iron and Steel Production											
Steel											
Pig Iron											
Sinter											
Coke											
2. Ferroalloys Production											
3. Aluminium Production											
5. Other *(please specify)*											
D. Other Production											
1. Pulp and Paper											
2. Food and Drink											
G. Other *(please specify)*											

[1] Share specific information (e.g. data on virgin and recycled steel production) could be provided in the documentation box.

Note: In case of confidentiality of the activity data information, the entries should provide aggregate figures but there should be a note in the documentation box indicating this.

Documentation box:

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6 Year:

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-143	HFC-143a	HFC-152a	HFC-227ea	HFC-236fa	HFC-245ca	Total HFCs	CF$_4$	C_2F_6	C_4F_{10}	C_5F_{12}	c-C_4F_8	C_6F_{14}	CF_3	Total PFCs[1]	SF_6
	Gg CO$_2$ eq[2]																						
Total Actual Emissions of Halocarbons (by chemical) and SF_6																							
1 Metal Production																							
Continuous Production																							
S1 Used in Aluminium Foundries																							
S1 Used in Magnesium Foundries																							
2 Production of Halocarbons and SF_6																							
2 By-product Emissions																							
Production of HCFC-22																							
Other																							
2 Fugitive Emissions																							
2 Other (please specify)																							
2(a) Consumption of Halocarbons and SF_6 (actual emissions - Tier 2)																							
1 Refrigeration and Air Conditioning Equipment																							
2 Foam Blowing																							
3 Fire Extinguishers																							
4 Aerosols/Metered Dose Inhalers																							
5 Solvents																							
6 Semiconductor Manufacture																							
7 Electrical Equipment																							
8 Other (please specify)																							
(a) Other (please specify)																							

[1] Although shaded, the columns with HFCs and PFCs totals on sheet 1 are kept for consistency with sheet 2 of the table.

[2] Note that the units used in this table differ from those used in the rest of the Sectoral report tables, i.e. [B] instead of [kg].

Note: Where information is confidential the entries should provide aggregate figures but there should be a note indicating this in the relevant documentation boxes of the Sectoral background data tables or as a footnote to this table. Gases with GWP not yet agreed upon by the COP, should be reported in Table 9 (Completeness), sheet 2.

TABLE 2(II) SECTORAL REPORT FOR INDUSTRIAL PROCESSES - EMISSIONS OF HFCs, PFCs AND SF_6
(Sheet 2 of 2)

Year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFC-23	HFC-32	HFC-41	HFC-43-10mee	HFC-125	HFC-134	HFC-134a	HFC-143	HFC-143a	HFC-152a	HFC-227ea	HFC-236fa	HFC-245ca	Total HFCs	CF_4	C_2F_6	C_3F_8	C_4F_{10}	$c\text{-}C_4F_8$	C_5F_{12}	C_6F_{14}	Total PFCs	SF_6
	HFCs[1]														PFCs								
Tier 1 Total Potential Emissions of Halocarbons (by chemical) and SF_6[2]																							
Production[3]																							
Import																							
In bulk																							
In products[4,5]																							
Export																							
In bulk																							
In products[4,5]																							
Destroyed amounts																							
GWP values used	11700	650	150	1300	2800	1000	1300	140	300	3800	2900	6300	560		6500	9200	7000	7000	8700	7500	7400		23900
Total Actual Emissions[6] ($Gg CO_2$ eq.)																							
Metal Production																							
Production of Halocarbons and SF_6																							
Use Consumption of Halocarbons and SF_6																							
Other (please specify)																							
Actual Potential Actual Emissions from Consumption of Halocarbons and SF_6																							
Actual emissions ($Gg CO_2$ eq.)																							
Potential emissions - Tier 1[7] ($Gg CO_2$ eq.)																							
Potential/Actual emissions ratio																							

[1] Potential emissions of each chemical of halocarbons and SF_6 estimated using Tier 1 or Tier 1b of the IPCC Guidelines (Volume 3 Reference Manual, pp. 2.13-2.30). When potential emissions estimates are available in a disaggregated manner corresponding to the subsectors for actual emissions defined on sheet 1 of this table, these should be reported in an annex to sheet 2, using the format of sheet 2 section 1 of 1 for Summary 1 of this common reporting format to indicate whether Tier 1 or Tier 1b was used.

[2] Production refers to production of new chemicals. Recycled substances could be included here, but it should be ensured that double counting of emissions is avoided. Relevant explanations should be provided as a footnote to the table.

[3] Relevant only for Tier 1b.

[4] Source of the actual emissions of each chemical of halocarbons and SF_6 from the source categories given in sheet 1 of the table multiplied by the corresponding GWP values.

[5] Potential emissions of each chemical of halocarbons and SF_6 taken from row Tier 1 multiplied by the corresponding GWP values.

Note: As stated in the revised UNFCCC guidelines, Parties should report actual emissions of HFCs, PFCs and SF_6, where data are available, providing disaggregated data by chemical and source category in units of mass and in CO_2 equivalents. Parties reporting actual emissions should also report potential emissions for the sources where the concept of potential emissions applies, for reasons of transparency and comparability.

Year:

TABLE 2(II). C, E SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Metal Production; Production of Halocarbons and SF_6

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS[1]	EMISSIONS[2]	
	Description[3]	(1)	(kg/t)	(t)	(t)
C. PFCs and SF_6 from Metal Production					
PFCs from Aluminium Production					
CF_4					
C_2F_6					
SF_6					
Aluminium Foundries	SF_6 consumption				
Magnesium Foundries					
E. Production of Halocarbons and SF_6					
1. By-product Emissions					
Production of HCFC-22					
HFC-23					
Other (please specify)					
2. Fugitive Emissions					
HFCs (specify chemicals)					
PFCs (specify chemicals)					
SF_6					
3. Other (please specify)					

[1] Specify the activity data used as shown in the examples within brackets. When reporting Tier 1a (for C), Tier 2 (for E) and country specific methods, provide any other relevant activity data used in the documentation box below.

[2] Emissions and implied emission factors are after recovery.

[3] Enter quantities in which the final emissions are reported after subtracting the quantities for emission recovery, oxidation, destruction, transformation. Enter these quantities in the specified column and use the documentation box for further explanations.

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note in the documentation box indicating this.

Documentation box:

TABLE 2(B)2 SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA			IMPLIED EMISSION FACTORS			EMISSIONS		
	Data on chemical								
	Filled in new manufactured products	In operating systems (average annual stocks)	Remained in products at decommissioning	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacturing	From stocks	From disposal
	(1)			(2)			(3)		
1. Refrigeration									
Air Conditioning Equipment									
Domestic Refrigeration									
specify chemicals[1]									
e.g. HFC-125									
e.g. HFC-134a									
e.g. HFC-143a									
e.g. HFC-152a									
e.g. HFC-227ea									
Commercial Refrigeration									
Transport Refrigeration									
Industrial Refrigeration									
Stationary Air Conditioning									
Mobile Air Conditioning									
2. Foam Blowing									
Hard Foam									
Soft Foam									

[1] Once should use the documentation box to provide information on the amount of the chemical reported (mass unit) and the Tier 2 methodology used to derive information used in the emissions estimation.

[2] Use the rows below to specify the chemical consumed, as given in the example. If necessary, more rows could be added for reporting the chemicals typically from a source.

Note: Table 2 (B)2 provides for reporting all the activity data and emission factors used to calculate actual emissions from consumption of halocarbons and SF_6 using the "bottom-up approach" focused on the total stock of equipment and estimated emission rates from this equipment. Some Parties may prefer to estimate their actual emissions following the alternative "top-down approach" (based on annual sales of equipment and/or gas). These Parties should provide the activity data used in the current format and any other relevant information in the documentation box. Data these Parties should provide includes (1) the amount of fluid used to fill new products, (2) the amount of fluid used to service existing products, (3) the amount of fluid originally used to fill existing products (the total nameplate capacity of existing products), (4) the product lifetime, and (5) the growth rate of product sales, if this has been used to calculate the amount of fluid originally used to fill existing products. Alternatively, Parties may provide alternative formats with equivalent information. These formats may be considered for future revisions of the common reporting format after the trial period.

Year :

TABLE 2(II).F SECTORAL BACKGROUND DATA FOR INDUSTRIAL PROCESSES
Consumption of Halocarbons and SF_6

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA (Amount of chem)			IMPLIED EMISSION FACTORS			EMISSIONS		
	Filled in new manufactured products	Retained in stocks of entities (average annual stocks)	Recognized as product or destruction amounts [1]	Product manufacturing factor	Product life factor	Disposal loss factor	From manufacture	From use	From disposal
	(1)			(% per annum)			(1)		
3. Fire Extinguishers									
4. Aerosols									
Metered Dose Inhalers									
Other									
5. Solvents									
6. Semiconductors									
7. Electric Equipment									
8. Other (please specify)									

Note: Where the activity data are confidential, the entries should provide aggregate figures, but there should be a note indicating this and explanations in the documentation box.

Documentation box:

TABLE 3 SECTORAL REPORT FOR SOLVENT AND OTHER PRODUCT USE
(Sheet 1 of 1)

Year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2	N_2O	NMVOC
	(Gg)		
Total Solvent and Other Product Use			
A Paint Application			
B Degreasing and Dry Cleaning			
C Chemical Products, Manufacture and Processing			
D Other *(please specify)*			
(Use of N_2O for Anaesthesia)			
(N_2O from Fire Extinguishers)			
(N_2O from Aerosol Cans)			
(Other Use of N_2O)			

Please account for the quantity of carbon released in the form of NMVOC in both the NMVOC and the CO columns.

Note: The IPCC Guidelines do not provide methodologies for the calculation of emissions of N_2O from Solvent and Other Product Use. If reporting such data, Parties should provide additional information (activity data and emission factors) used to make these estimates in the documentation box to Table 3.A-D.

TABLE 3.A-D SECTORAL BACKGROUND DATA FOR SOLVENT AND OTHER PRODUCT USE

Year :

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA		IMPLIED EMISSION FACTORS	
	Description	(kt)	CO_2 (t/t)	N_2O (t/t)
A. Paint Application				
B. Degreasing and Dry Cleaning				
C. Chemical Products, Manufacture and Processing				
D. Other *(please specify)*[1]				
(Use of N_2O for Anaesthesia)				
(N_2O from Fire Extinguishers)				
(N_2O from Aerosol Cans)				
(Other Use of N_2O)				

[1] Some probable sources are provided in brackets. Complement the list with other relevant sources. Make sure that the order is the same as in Table 3.

Note: The table follows the format of the IPCC Sectoral Report for Solvent and Other Product Use, although some of the source categories are not relevant to the direct GHG emissions.

Documentation box:

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	(Gg)				
Total Agriculture					
A. Enteric Fermentation					
1. Cattle					
Dairy Cattle					
Non-Dairy Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					
10. Other (please specify)					
B. Manure Management					
1. Cattle					
Dairy Cattle					
Non-Dairy Cattle					
2. Buffalo					
3. Sheep					
4. Goats					
5. Camels and Llamas					
6. Horses					
7. Mules and Asses					
8. Swine					
9. Poultry					

TABLE 4 SECTORAL REPORT FOR AGRICULTURE
(Sheet 2 of 2)

Year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CH_4	N_2O	NO_x	CO	NMVOC
	Gg				
H. Manure Management (continued)					
10. Anaerobic Lagoons					
11. Liquid Systems					
12. Solid Storage and Dry Lot					
13. Other (please specify)					
I. Rice Cultivation					
1. Irrigated					
2. Rainfed					
3. Deep Water					
4. Other (please specify)					
J. Agricultural Soils[1]					
1. Direct Soil Emissions					
2. Animal Production					
3. Indirect Emissions					
4. Other (please specify)					
K. Prescribed Burning of Savannas					
L. Field Burning of Agricultural Residues					
1. Cereals					
2. Pulse					
3. Tuber and Root					
4. Sugar Cane					
5. Other (please specify)					
M. Other (please specify)					

[1] See footnote 1 to Summary 1.A of this common reporting format. Either which direct N_2O emissions and removals from agricultural soils under J.D. Agricultural Soils category of the sector Agriculture should include the amount [or] of these emissions or removals in the documentation box to Table 4.D. Additional information (activity data, implied emission factor) should also be provided in the relevant documentation box to Table 4.D. The table is not relevant for reporting the CO_2 emissions and removals in the sub-sectors covered by the IPCC Tables 4.A–4.C (Section 4 Report for Agriculture).

Note: The IPCC Guidelines do not provide methodologies for the calculation of CH_4 emissions, CH_4 and N_2O removals from agricultural soils or CO_2 emissions from savanna burning or agricultural residues burning. If you have reported such data, you should provide additional information on activity data and emission factors used to make these estimates using the relevant documentation boxes.

Common Reporting Format for the provision of inventory information by Annex I Parties to the UNFCCC

TABLE 4.A SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Enteric Fermentation

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA[1] AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTORS
	Population size[2] (1000 Head)	Average daily feed intake (MJ/day)	CH_4 conversion (%)	CH_4 (kg CH_4/head/yr)
1. Cattle				
Dairy Cattle[3]				
Non-Dairy Cattle				
2. Buffalo				
3. Sheep				
4. Goats				
5. Camels and Llamas				
6. Horses				
7. Mules and Asses				
8. Swine				
9. Poultry				
10. Other *(please specify)*				

Additional information (for Tier 2)[4]

Disaggregated list of animals[5]		Dairy Cattle	Non-Dairy Cattle	Other *(specify)*		
Indicators						
Weight	(kg)					
Feeding situation[6]						
Milk yield	(kg/day)					
Work	(hrs/day)					
Pregnant	(%)					
Digestibility of feed	(%)					

[4] Compare to Tables A-1 and A-2 of the IPCC Guidelines (Volume 3 Reference Manual, pp. 4.31-4.34). These data are relevant if Parties do not have data on average feed intake.

[5] Disaggregate to the split actually used. Add columns to the table if necessary.

[6] Specify feeding situation as pasture, stall fed, confined, open range, etc.

[1] In the documentation boxes to all Sectoral background data tables for Agriculture, Parties should provide information on whether the activity data is one year or a 3-year average.

[2] Parties are encouraged to provide detailed livestock population data by animal type and region in a separate table. This consistent set of animal population statistics should be used to estimate CH_4 emissions from enteric fermentation, CH_4 and N_2O from manure management, N_2O direct emissions from soil and N_2O emissions associated with manure production, as well as emissions from the use of manure as fuel, and sewage-related emissions reported in the waste sector.

[3] Including data on dairy heifers, if available.

Documentation box:

TABLE 4.B(a) SECTORAL BACKGROUND DATA FOR AGRICULTURE
CH_4 Emissions from Manure Management

Year :

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS CH_4
	Population size[1]	Allocation by climate region[2]			Typical animal mass	VS[3] daily excretion	CH_4 producing potential (B_0)[4]	
		Cool	Temperate	Warm				
	(1000 head)	(%)			(kg)	(kg dm head^{-1} d^{-1})	(m^3 CH_4 kg^{-1} VS)	(kg CH_4 head^{-1} yr)
1. Cattle								
Dairy Cattle[5]								
Non-Dairy Cattle								
2. Buffalo								
3. Sheep								
4. Goats								
5. Camels and Llamas								
6. Horses								
7. Mules and Asses								
8. Swine								
9. Poultry								

[1] See footnote 1 to Table 4.A of the common reporting format.

[2] Climate regions are defined in terms of annual average temperature as follows: Cool – less than 15°C; Temperate – 15°C to 25°C inclusive; and Warm – greater than 25°C (see Table 4.2 of the IPCC Guidelines (Volume 3 Reference Manual, p. 4.8)).

[3] VS – Volatile Solids; Bo – maximum methane producing capacity for manure (IPCC Guidelines (Volume 3 Reference Manual, p. 4.23 and p. 4.15).

[4] Including data on dairy heifers, if available.

Additional information (for Tier 2):

Animal category	Subcategory	Climate region	Animal waste management system					
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range Paddock	Other
Dairy Cattle	Mature	Cool						
		Temperate						
		Warm						
	Other	Cool						
		Temperate						
		Warm						
Non-Dairy Cattle	Mature	Cool						
		Temperate						
		Warm						
	Other	Cool						
		Temperate						
		Warm						
Swine	Mature	Cool						
		Temperate						
		Warm						
	Other	Cool						
		Temperate						
		Warm						

[5] Copy the above table as many times as necessary.

[6] MCF – Methane Conversion Factor (IPCC Guidelines, (Volume 3 Reference Manual, p. 4.99)). In the case of use of other climate region categorization, please replace the entries in the cells with the climate regions for which the MCFs are specified.

Documentation box:

TABLE 4.B(b) SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

N_2O Emissions from Manure Management

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION								IMPLIED EMISSION FACTORS	
	Population size[1] (1000s)	Nitrogen excretion (kg N/head/yr)	Nitrogen excretion per animal waste management system (kg N/yr)						Emission factor per animal waste management system (kg N2O-N/kg N)	
			Anaerobic lagoon	Liquid system	Daily spread	Solid storage and dry lot	Pasture range and paddock	Other		
Non-Dairy Cattle									Anaerobic lagoon	
Dairy Cattle									Liquid system	
Sheep									Solid storage and dry lot	
Swine									Other *(please specify)*	
Poultry										
Other *(please specify)*										
Total per AWMS[2]										

[1] See footnote 1 to Table 4.A of this common reporting format

[2] AWMS - Animal Waste Management System

Documentation box:

TABLE 4.C SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Rice Cultivation

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR[1]	EMISSIONS
		Harvested area[2]	Organic amendments added[3]		CH_4	CH_4
		(Mha/season)	Type	(t/ha)	(g/m²)	(Tg)
1. Irrigated						
Continuously Flooded						
Intermittently Flooded	Single Aeration					
	Multiple Aeration					
2. Rainfed						
Flood Prone						
Drought Prone						
3. Deep Water						
Water Depth 50-100 cm						
Water Depth >100 cm						
4. Other *(please specify)*						
Upland Rice[4]						
Total[4]						

[1] The implied emission factor takes account of all relevant corrections for continuously flooded fields without organic amendment plus the correction for the organic amendments, if used, as well as of the effect of different soil characteristics, if taken into account, on methane emissions.

[2] Harvested area is the cultivated area multiplied by the number of cropping seasons per year.

[3] Specify dry weight or wet weight for organic amendments.

[4] These rows are included to allow comparison with the international statistics. Upland rice emissions are assumed to be zero and are ignored in the emissions calculations.

Documentation box:

When disaggregating by more than one region within a country, provide additional information in the documentation box.

Where available, provide activity data and scaling factors by soil type and rice cultivar.

TABLE 4.D SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year:

Agricultural Soils[1]

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION		IMPLIED EMISSION FACTORS	EMISSIONS
	Description	Value	(kg N_2O-N/kg N)[2]	(Gg N_2O)
Direct Soil Emissions	N input to soils (Tg N/yr)			
Synthetic Fertilizers	Use of synthetic fertilizers (Tg N/yr)			
Animal Wastes Applied to Soils	Nitrogen input from manure applied to soils (Tg N/yr)			
N-fixing Crops	Dry pulses and soybeans produced (Tg dry biomass/yr)			
Crop Residue	Dry production of other crops (Tg dry biomass/yr)			
Cultivation of Histosols	Area of cultivated organic soils (ha)			
Animal Production	N excretion on pasture range and paddock (Tg N/yr)			
Indirect Emissions				
Atmospheric Deposition	Volatized NH_3-N and NOx-N from fertilizers and animal wastes (Tg N/yr)			
Nitrogen Leaching and Run-off	N from fertilizers and animal wastes that is lost through leaching and run-off (Tg N/yr)			
Other *(please specify)*				

Additional information

Fraction[3]	Description	Value
F_{BURN}	Fraction of crop N that is burned	
F_{PRP}	Fraction of livestock N excretion to pasture, range and paddock by livestock	
F_{SN}	Fraction of synthetic fertilizer N applied to soils that volatilizes as NH_3 and NO_x	
F_{AM}	Fraction of livestock N excretion that volatilizes as NH_3 and NO_x	
F_{PRP}	Fraction of livestock N excreted and deposited onto soil during grazing	
F_{SN}	Fraction of N input to soils that is lost through leaching and runoff	
F_{BN}	Fraction of N in crop N fixing crop	
F_{CR}	Fraction of crop N in crop	
F_{RM}	Fraction of crop residue removed from the field as crop	

[3] Use the fractions as specified in the IPCC Guidelines (Volume 3 Reference Manual, pp. 4.91 – 4.111).

[1] See footnote 4 to Summary 1.A of this common reporting format. Parties which choose to report CO_2 emissions and removals from agricultural soils under 4.D Agricultural Soils category should indicate the amount [Gg] of these emissions or removals and relevant additional information (activity data, implied emissions factors) in the documentation box.

[2] To convert from N_2O-N to N_2O emissions, multiply by 44/28.

Documentation box:

TABLE 4.E SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year :

Prescribed Burning of Savannas

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION					IMPLIED EMISSION FACTORS		EMISSIONS	
						(kg/t dm)		(Gg)	
(specify ecological zones)	Area of savanna burned (K ha/yr)	Average aboveground biomass density (t dm/ha)	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass	CH_4	N_2O	CH_4	N_2O

Additional information

	Living	Dead
Fraction of aboveground biomass		
Fraction oxidized		
Carbon fraction		

Documentation box:

TABLE 4.F SECTORAL BACKGROUND DATA FOR AGRICULTURE

Year:

Field Burning of Agricultural Residues

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS		EMISSIONS	
	Crop production (1)	Residue/Crop ratio	Dry matter fraction	Fraction of savanna burned	Biomass burned (Gg dm)	Nitrogen fraction in biomass of residues	CH_4 (kg/t dm)	N_2O (kg/t dm)	CH_4 (Gg)	N_2O (Gg)
1. Cereals										
Wheat										
Barley										
Maize										
Oats										
Rye										
Rice										
Other (please specify)										
2. Pulse[1]										
Dry bean										
Peas										
Soybeans										
Other (please specify)										
3 Tuber and Root										
Potatoes										
Other (please specify)										
4 Sugar Cane										
5 Other (please specify)										

[1] To be used in Table 4.D of this common reporting format

Documentation box:

TABLE 5 SECTORAL REPORT FOR LAND-USE CHANGE AND FORESTRY
(Sheet 1 of 1)

Year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 emissions	CO_2 removals	Net CO_2 emissions/removals	CH_4	CO	NO_x	VOC
	(Gg)						
Total Land-Use Change and Forestry							
A. Changes in Forest and Other Woody Biomass Stocks							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other (please specify)							
Harvested Wood[1]							
B. Forest and Grassland Conversion[2]							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other (please specify)							
C. Abandonment of Managed Lands							
1. Tropical Forests							
2. Temperate Forests							
3. Boreal Forests							
4. Grasslands/Tundra							
5. Other (please specify)							
D. CO_2 Emissions and Removals from Soil							
Cultivation of Mineral Soils							
Cultivation of Organic Soils							
Liming of Agricultural Soils							
Forest Soils							
Other (please specify)[3]							
E. Other (please specify)							

[1] Following the IPCC Guidelines, the harvested wood should be reported under Changes in Forest and Other Woody Biomass Stocks (Volume 3, Reference Manual, p. 5.17).

[2] Include only the emissions of CO_2 from Forest and Grassland Conversion. Associated removals should be reported under section D.

[3] Include emissions from soils not reported under sections A, B and C.

Note: See footnote 4 to Summary 1. Use the common reporting format.

TABLE 5.A SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Year

Changes in Forest and Other Woody Biomass Stocks

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES			ACTIVITY DATA		IMPLIED EMISSION FACTORS	ESTIMATES
			Area of forest biomass stock	Average annual growth rate	Implied carbon uptake factor	Carbon uptake increment
			(kha)	(t dm ha^{-1})	(t C ha^{-1})	(Gg C)
Tropical	Plantations	Acacia spp.				
		Eucalyptus spp.				
		Tectona grandis				
		Pinus spp.				
		Pinus caribaea				
		Mixed Hardwoods				
		Mixed Fast-growing Hardwoods				
		Mixed Softwoods				
	Other Forests	Moist				
		Seasonal				
		Dry				
	Other (specify)					
Temperate	Plantations					
	Commercial	Evergreen				
		Deciduous				
	Other (specify)					
Boreal						
Commercial Trees (specify type)			Number of trees (1,000 trees)	Annual growth rate (t dm tree^{-1} year^{-1})	Carbon uptake factor (t C tree^{-1})	Carbon uptake increment (Gg C)
					Total carbon growth increment (Gg C)	
					Net C uptake (Gg C)	

	Amount of biomass removed (kt dm)	Carbon emission factor (t C t dm^{-1})	Carbon released (Gg C)
Fuelwood consumption (Commercial sector)			
Traditional Fuelwood Consumption			
Total Wood Removals			
		Total carbon released (Gg C)	
		Net C uptake (Gg C)	

	Net annual carbon uptake (Gg C)
	Net annual carbon uptake (Tg C)

Many countries may be unable to estimate all the data required in this table.

The net annual carbon uptake increment is determined by subtracting the annual biomass growth removals losses, including the losses of forest products and wood left during harvest. The IPCC guidelines recommend carbon accumulation in soils and other biomass (non-woody vegetation) in the Year(s) column. This information may also be provided under Other Changes in Carbon Stocks.

Note: Sectoral Background Data Tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country-specific methods and models should report information in them in a transparent manner, and may also suggest changes to the provided sectoral background data tables suitable for their calculation method.

Documentation box:

TABLE 5.B SECTORAL BACKGROUND DATA FOR LAND USE CHANGE AND FORESTRY Year :

Forest and Grassland Conversion

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION							IMPLIED EMISSION FACTORS					EMISSIONS				
		On and off site burning				Decay of above-ground biomass[1]			Burning				Decay	Burning				Decay
									On site			Off site		On site			Off site	
Vegetation types		Area converted annually (kha)	Annual net loss of biomass (t d.m./ha)	Quantity of biomass burned: On site (kt d.m.)	Quantity of biomass burned: Off site (kt d.m.)	Average area converted (kha)	Average annual net loss of biomass (t d.m./ha)	Average quantity of biomass left to decay (kt d.m.)	CO_2	CH_4	N_2O	CO	CO	CO_2	CH_4	N_2O	CO	CO_2
									(t/ha)					(t/ha)				
Tropical	Wet/Very Moist																	
	Moist: short dry season																	
	Moist: long dry season																	
	Dry																	
	Montane Moist																	
	Montane Dry																	
Tropical Savanna/Grasslands																		
Temperate	Coniferous																	
	Broadleaf																	
	Mixed: Broadleaf/ Coniferous																	
Grasslands																		
Boreal	Mixed: Broadleaf/ Coniferous																	
	Coniferous																	
	Deciduous																	
	Dwarf-shrub																	
Grasslands/Tundra																		
Other																		

[1] Activity data can be decided on 10 year average. Specify the average decay time which is appropriate for the local conditions, if other than 10 years.

Emissions/removals	On site	Off site
Immediate carbon release from burning		
Total On site and Off site (Gg C)		
Delayed emissions from decay (Gg C)		
Total annual carbon release (Gg C)		
Total annual CO_2 emissions (Gg CO_2)		

Additional information

Fractions	On site	Off site
Fraction of biomass burned (average)		
Fraction which oxidizes during burning (average)		
Carbon fraction of above-ground biomass (average)		
Fraction left to decay (average)		
Nitrogen-carbon ratio		

Note: Sectoral background data tables on Land Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

TABLE 5.C SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Year:

Abandonment of Managed Lands

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA AND OTHER RELATED INFORMATION						IMPLIED EMISSION FACTORS		ESTIMATES	
		Total area abandoned and regrowing[1]		Annual rate of aboveground biomass growth		Carbon fraction of aboveground biomass		Rate of aboveground biomass carbon uptake		Annual carbon uptake in aboveground biomass	
Original natural ecosystems		first 20 years (kha)	>20 years (kha)	first 20 years (t d.m./ha)	>20 years (t d.m./ha)	first 20 years	>20 years	first 20 years (t C/ha/yr)	>20 years (t C/ha/yr)	first 20 years (Gg C/yr)	>20 years (Gg C/yr)
Tropical	Wet/Very Moist										
	Moist: short dry season										
	Moist: long dry season										
	Dry										
	Montane Moist										
	Montane Dry										
Tropical Savanna Grasslands											
Temperate	Mixed Broadleaf/Coniferous										
	Coniferous										
	Broadleaf										
Grasslands											
Boreal	Mixed Broadleaf/Coniferous										
	Coniferous										
	Forest-tundra										
Wetlands/Tundra											
Other											

Total annual carbon uptake (Gg C)	
Total annual CO_2 removal (Gg CO_2)	

[1] If lands are regenerating to grassland, then the default assumption is that no significant changes in above-ground biomass occur.

Note: Sectoral background data tables on Land-use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

TABLE 5.D SECTORAL BACKGROUND DATA FOR LAND-USE CHANGE AND FORESTRY

Year :

CO_2 Emissions and Removals from Soil

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTORS	ESTIMATES
	Land area (Mha)	Net annual rate of soil carbon uptake/removal (Mg C ha-yr)	Net change in soil carbon in mineral soils (Gg C or Gg CO_2)
Cultivation of Mineral Soils[1]			
High Activity Soils			
Low Activity Soils			
Sandy			
Volcanic			
Wetland (Agric)			
Other (specify)			
	Land area (ha)	Annual loss rate (Mg C ha-yr)	Carbon emissions from organic soils (Mg C)
Cultivation of Organic Soils			
Cool Temperate			
Upland Crops			
Pasture/Forest			
Warm Temperate			
Upland Crops			
Pasture/Forest			
Tropical			
Upland Crops			
Pasture/Forest			
	Total annual amount of lime (Mg)	Carbon conversion factor	Carbon emissions from liming (Gg C)
Liming of Agricultural Soils			
Limestone $CaCO_3$			
Dolomite $CaMg(CO_3)_2$			

Total annual net carbon emissions from agriculturally impacted soils (Gg C)	
Total annual net CO_2 emissions from agriculturally impacted soils (Gg CO_2)	

Additional information

Climate[2]	land-use management system[2]	Soil type					
		High activity soils	Low activity soils	Spodic	Volcanic	Wetland (Agric)	Organic soils
		percent distribution (%)					
Cool temperate	Cultivated						
	Set-aside/Conserved						

[1] These should represent the major types of land management systems and climatic regimes presented in the country as well as ecosystem types which were either converted to agriculture (e.g., forest or savannas, grasslands) or have been derived from previous agricultural land use (e.g., abandoned lands, reverted lands). Systems should also reflect differences in soil carbon stocks that can be related to differences in management (IPCC Guidelines (Volume 2: Workbook: Table 5-5 at p. 5.26, and Appendix (pp. 5.31 – 5.38)).

[2] The information to be reported under Cultivation of Mineral Soils aggregates data per soil types over all land-use/management systems. This refers to land area data and to the corresponding climatic and geophysical constraints to have accordingly.

Note: Sectoral background data tables on Land-Use Change and Forestry should be filled in only by Parties using the IPCC default methodology. Parties that use country specific methods and models should report information on them in a transparent manner, also providing suggestions for a possible sectoral background data table suitable for their calculation method.

Documentation box:

TABLE 6 SECTORAL REPORT FOR WASTE
(Sheet 1 of 1)

Year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2 [1]	CH_4	N_2O	NO_x	CO	NMVOC	SO_2
	(Gg)						
Total Waste							
A Solid Waste Disposal on Land							
1 Managed Waste Disposal on Land							
2 Unmanaged Waste Disposal Sites							
3 Other *(please specify)*							
B Wastewater Handling							
1 Industrial Wastewater							
2 Domestic and Commercial Wastewater							
3 Other *(please specify)*							
C Waste Incineration							
D Other *(please specify)*							

[1] Note that CO_2 from Waste Disposal and Incineration source categories should only be included if it stems from non-biological or inorganic waste sources

TABLE 6.A SECTORAL BACKGROUND DATA FOR WASTE
Solid Waste Disposal
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION				IMPLIED EMISSION FACTOR		EMISSIONS[1]	
	Annual MSW to the SWDS (kt)	MCF	DOC degradable (kt C)	CH_4 recovered (kt)	CH_4 (kg/t MSW)	CO_2 (kg/t MSW)	CH_4 (kt)	CO_2[2] (kt)
1. Managed Waste Disposal Land								
1. Managed Waste Disposal Site								
deep (>5m)								
shallow (<5m)								
2. Other (please specify)								

Additional information

Description	Value
Total population (000s)	
Urban population (000s)[3]	
Waste generation rate (kg/cap/year)	
Fraction of MSW disposed to SWDS	
Fraction of DOC in MSW	
Fraction of source recovered	
Fraction of source oxidized	
CH_4 conversion factor[4]	
CH_4 fraction in landfill gas	
Number of SWDS receiving CH_4	
H_2 generation rate constant (k)	
Time lag constant (yr)	
Composition of landfilled waste (%)	
Paper and paperboard	
Food and garden waste	
Plastics	
Glass	
Textiles	
Other (specify)	
other - (specify)	
other - (specify)	

TABLE 6.C SECTORAL BACKGROUND DATA FOR WASTE
Waste Incineration
(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA	IMPLIED EMISSION FACTOR			EMISSIONS		
	Annual incinerated waste (kt)	CO_2 (kg C/unit)	CH_4 (kg C/unit)	N_2O (kg C/unit)	CO_2[5] (kt)	CH_4 (kt)	N_2O (kt)
Waste Incineration (please specify)							
Category 2							
Category 3							

MSW = Municipal Solid Waste; SWDS = Solid Waste Disposal Site; MCF = Methane Correction Factor; DOC = Degradable Organic Carbon (IPCC Guidelines (Volume 4 Reference Manual) – see note to 6.4.4). MSW includes household waste, garden and park waste, commercial and institutional waste, street cleaning waste and bulky waste arising from households. MSW should not include inorganic industrial waste such as construction or demolition material.

[1] Actual emissions (after recovery).

[2] CO_2 emissions will usually be zero.

[3] Under Waste Disposal, CO_2 emissions could be reported only when the Reference Approach is used and the fraction of the fossil carbon in waste is known. While the CO_2 emissions from Biogenic wastes are not included in the totals.

[4] See IPCC Guidelines (Volume 4 Reference Manual, p. 6.9).

[5] For Power energy Incineration.

Documentation box: All relevant information used to calculate/estimate should be provided in the additional information box and in the documentation box.
Parties that use country specific models should note this with a brief rationale in the documentation box and fill the relevant cells only.

TABLE 6.B SECTORAL BACKGROUND DATA FOR WASTE

Wastewater Handling

(Sheet 1 of 1)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND RELATED INFORMATION[1]				IMPLIED EMISSION FACTOR			EMISSIONS[2]		
	Total organic product		BOD_5 removed and/or flared		CH_4		N_2O[3]	CH_4		N_2O[3]
	Wastewater	Sludge	Wastewater	Sludge	Wastewater	Sludge		Wastewater	Sludge	
	Gg TB [4]	Gg	Gg		kg/kg TB	kg/kg TB	kg/kg TB	Gg	Gg	Gg
Industrial Wastewater										
Domestic and Commercial Wastewater										

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	ACTIVITY DATA AND OTHER RELATED INFORMATION			IMPLIED EMISSION FACTOR	EMISSIONS
	Population[5] (1000s)	Protein consumption (grams/capita/day)	N fraction (kg N/kg protein)	N/A (kg N in N_2O/kg sewage N produced)	N/A (Gg)
N/A from human sewage[6]					

[1] TB = degradable organic component. TB indicates, as a default, Chemical Oxygen Demand for industrial wastewater and BOD_5 (biochemical Oxygen Demand for Domestic/Commercial wastewater (Refer to IPCC Guidelines Volume 3 Reference Manual, pp. 6.14 to 6.38).

[2] Actual emissions (after recovery).

[3] Before using other methods for estimation of N_2O emissions from human sewage or wastewater treatment should provide corresponding information on methods, activity data and emission factors used in the documentation box. Use the table to provide aggregate data.

[4] Specify whether total or other population is used in the calculations and the rationale for doing so. Provide explanation in the documentation box.

Additional information Year

	Domestic	Industrial
Total wastewater (m³)		
Treated wastewater (%)		

Wastewater Streams	Wastewater output (m³)	TB (kg/1000 m³)
Industrial		
Pulp and paper		
Meat/fish		
Dairy/soya		
Food and beverages		
Paper and pulp		
Organic chemical		
Other (specify)		
	TB (kg BOD/1000 person/yr)	
Domestic		
Other		

Handling systems	Industrial wastewater treated (%)	Ind. sludge treated (%)	Domestic wastewater treated (%)	Domestic sludge treated (%)
Aerobic				
Anaerobic				
Other (specify)				

Documentation box:

TABLE 7 OVERVIEW TABLE[1] FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A) Year

(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFC		PFC		SF_6		NO_x		CO		NMVOC		SO_2	
	Emissions	Removals	Emissions	Removals	Emissions	Removals	Emissions	Removals	Emissions	Removals	Emissions	Removals	Emissions	Removals	Emissions	Removals	Emissions	Removals	Emissions	Removals
Total National Emissions and Removals																				
1 Energy																				
A Fuel Combustion Activities																				
Reference Approach																				
Sectoral Approach																				
1 Energy Industries																				
2 Manufacturing Industries and Construction																				
3 Transport																				
4 Other Sectors																				
5 Other																				
B Fugitive Emissions from Fuels																				
1 Solid Fuels																				
2 Oil and Natural Gas																				
2 Industrial Processes																				
A Mineral Products																				
B Chemical Industry																				
C Metal Production																				
D Other Production																				
E Production of Halocarbons and SF_6																				

[1] This table is intended to be used by Parties to summarize their own assessment of completeness (e.g. partial, full estimate, not estimated) and sources (fuels, methane, key categories, bunker fuels, etc.) of major source/sink inventory estimates. The latter could be understood as a quality assessment of the uncertainty of the estimates. This table might change once the IPCC completes its work on managing uncertainties of GHG inventories. The title of the table was kept for consistency with the current table in the IPCC Guidelines.

Note: To fill in the table use the notation key as given in the IPCC Guidelines (Volume 1 Reporting Instructions, Tables 1-7)

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A) Year

(Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6		NO_x		CO		NMVOC		SO_2	
	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes	Emissions	Uptakes
2 Industrial Processes (continued)																				
2 C Consumption of Halocarbons and SF_6																				
Potential [1]																				
Actual [2]																				
2 C Other																				
3 Solvent and Other Product Use																				
4 Agriculture																				
A Enteric Fermentation																				
B Manure Management																				
C Rice Cultivation																				
D Agricultural Soils																				
F Prescribed Burning of Savannas																				
F Field Burning of Agricultural Residues																				
4 Other																				
5 Land Use Change and Forestry																				
A Changes in Forest and Other Woody Biomass Stocks																				
B Forest and Grassland Conversion																				

[1] Potential emissions based on Tier 1 approach of the IPCC Guidelines

[2] Actual emissions based on Tier 2 approach of the IPCC Guidelines

TABLE 7 OVERVIEW TABLE FOR NATIONAL GREENHOUSE GAS INVENTORIES (IPCC TABLE 8A) Year

(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2		CH_4		N_2O		HFCs		PFCs		SF_6		NO_x		CO		NMVOC		SO_2	
	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake	Emissions	Uptake
5 Land-Use Change and Forestry (continued)																				
C Abandonment of Managed Lands																				
D CO Emissions and Removals from Soil																				
E Other																				
6 Waste																				
A Solid Waste Disposal on Land																				
B Waste-water Handling																				
C Waste Incineration																				
D Other																				
7 Other *(please specify)*																				
Memo Items																				
International Bunkers																				
Aviation																				
Marine																				
Multilateral Operations																				
CO_2 Emissions from Biomass																				

TABLE 8(a) RECALCULATION - RECALCULATED DATA Year:

Recalculated year:

(Sheet 1 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		CO_2			CH_4			N_2O		
		Previous submission	Latest submission	Difference[1][2]	Previous submission	Latest submission	Difference[1][2]	Previous submission	Latest submission	Difference[1][2]
		CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)	CO_2 equivalent (Gg)		(%)
Total National Emissions and Removals										
1. Energy										
1.A	Fuel Combustion Activities									
1.A.1	Energy Industries									
1.A.2	Manufacturing Industries and Construction									
1.A.3	Transport									
1.A.4	Other Sectors									
1.A.5	Other									
1.B	Fugitive Emissions from Fuels									
1.B.1	Solid fuel									
1.B.2	Oil and Natural Gas									
2. Industrial Processes										
2.A	Mineral Products									
2.B	Chemical Industry									
2.C	Metal Production									
2.D	Other Production									
2.G	Other									
3. Solvent and Other Product Use										
4. Agriculture										
4.A	Enteric Fermentation									
4.B	Manure Management									
4.C	Rice Cultivation									
4.D	Agricultural Soils[3]									
4.E	Prescribed Burning of Savannas									
4.F	Field Burning of Agricultural Residues									
4.G	Other									
5. Land-Use Change and Forestry (net)										
5.A	Changes in Forest and Other Woody Biomass Stocks									
5.B	Forest and Grassland Conversion									
5.C	Abandonment of Managed Lands									
5.D	CO_2 Emissions and Removals from Soil									
5.E	Other									

[1] Estimate the percentage change due to recalculation with respect to the previously submitted estimate (Percentage change = 100% x [LS-PS]/PS], where LS = Latest submission and PS = Previous submission. All cases of recalculation of the estimate of the source/sink category should be addressed and explained in Table 8(b) of this common reporting format.

[2] See footnote 1 to Summary 1.A of this common reporting format.

TABLE 8(a) RECALCULATION - RECALCULATED DATA Year:

Recalculated year:

(Sheet 2 of 2)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	CO_2			CH_4			N_2O		
	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]
	CO_2 equivalent (kg)		(%)	CO_2 equivalent (kg)		(%)	CO_2 equivalent (CO_2)		(%)
6. Waste									
6.A Solid Waste Disposal on Land									
6.B Wastewater Handling									
6.C Waste Incineration[2]									
6.D Other									
7. Other *(please specify)*									
Memo Items:									
International Bunkers									
Multilateral Operations									
CO_2 Emissions from Biomass									

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	HFCs			PFCs			SF_6		
	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]	Previous submission	Latest submission	Difference[1]
	CO_2 equivalent (kg)		(%)	CO_2 equivalent (kg)		(%)	CO_2 equivalent (CO_2)		(%)
Total Actual Emissions									
2.C Aluminium Production									
2.E Production of Halocarbons and SF_6									
2.F Consumption of Halocarbons and SF_6									
Other									
Potential Emissions from Consumption of HFCs/PFCs and SF_6									

	Previous submission	Latest submission	Difference[1]
	CO_2 equivalent (kg)		(%)
Total CO_2 Equivalent Emissions with Land Use Change and Forestry[1]			
Total CO_2 Equivalent Emissions without Land Use Change and Forestry[1]			

[1] The information in these rows is requested to facilitate comparison of data since Parties differ in the way they report emissions and removals from Land Use Change and Forestry

TABLE 8(b) RECALCULATION - EXPLANATORY INFORMATION

Year :

(Sheet 1 of 1)

Specify the sector and source/sink category[1] where changes in estimates have occurred		GHG	RECALCULATION DUE TO			
			CHANGES IN:			Addition/removal/ replacement of source/sink categories
			Methods[2]	Emission factors[2]	Activity data[2]	

[1] Enter the identification code of the source/sink category (e.g. 1.B.1) in the first column and the name of the category (e.g. Fugitive Emissions from Solid Fuels) in the second column of the table (see Table 8(a)).

[2] Explain changes in methods, emission factors and activity data that have resulted in recalculation of the estimate of the source/sink as indicated in Table 8(a). Include relevant changes in the assumptions and coefficients under the "Methods" column.

Documentation box: Use the documentation box to report the justifications of the changes as to improvements in the accuracy, completeness and consistency of the inventory.

TABLE 9 COMPLETENESS

Year :

(Sheet 1 of 2)

Sources and sinks not reported (NE)[1]			
GHG	Sector[2]	Source/sink category[2]	Explanation
CO_2			
CH_4			
N_2O			
HFCs			
PFCs			
SF_6			

Sources and sinks reported elsewhere (IE)[1]				
GHG	Source/sink category	Allocation as per IPCC Guidelines	Allocation used by the Party	Explanation

[1] Please clearly indicate sources and sinks which are considered in the IPCC Guidelines but are not considered in the submitted inventory. Explain the reason for excluding these sources and sinks, in order to avoid arbitrary interpretations. An entry should be made for each source and sink for which the indicator "NE" is entered in the sectoral tables.

[2] Indicate omitted source/sink following the IPCC source/sink category structure (e.g. under Waste: source category Wastewater Handling).

[3] Please clearly indicate sources and sinks in the submitted inventory that are allocated to a sector other than that indicated by the IPCC Guidelines. Show the sector applied in the IPCC Guidelines and the sector to which the source or sink is allocated in the submitted inventory. Explain the reason for reporting these sources and sinks in a different sector. An entry should be made for each source/sink for which the indicator "IE" is used in the sectoral tables.

TABLE 9 COMPLETENESS

(Sheet 2 of 2)

Year :

Additional GHG emissions reported[1]						
GHG	Source category	Emissions (Gg)	Estimated GWP value (100-year horizon)	Emissions CO_2 equivalent (Gg)	Reference to the data source of GWP value	Explanation

[1] Parties are encouraged to provide information on emissions of greenhouse gases whose GWP values have not yet been agreed upon by the COP. Please include such gases in this table if they are considered in the submitted inventory. Provide additional information on the estimation methods used.

TABLE 10 EMISSIONS TRENDS (CO_2)

(Sheet 1 of 5)

Year

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO2 Emissions and Removals from Soil										
E. Other										
6. Waste										
A. Solid Waste Disposal on Land										
B. Wastewater Handling										
C. Waste Incineration										
D. Other										
7. Other (please specify)										
Total Emissions/Removals with LUCF										
Total Emissions without LUCF										
Memo Items:										
International Bunkers										
1. Aviation										
2. Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

TABLE 10 EMISSIONS TRENDS (CH_4) Year:

(Sheet 2 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
Total Emissions										
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF_6										
F. Consumption of Halocarbons and SF_6										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO_2 Emissions and Removals from Soil										
E. Other										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other *(please specify)*										
Memo Items:										
International Bunkers										
Aviation										
Marine										
Multilateral Operations										
CO_2 Emissions from Biomass										

TABLE 10 EMISSIONS TRENDS (N_2O)
(Sheet 3 of 5)

Year:

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
Total Emissions										
1. Energy										
A. Fuel Combustion (Sectoral Approach)										
1. Energy Industries										
2. Manufacturing Industries and Construction										
3. Transport										
4. Other Sectors										
5. Other										
B. Fugitive Emissions from Fuels										
1. Solid Fuels										
2. Oil and Natural Gas										
2. Industrial Processes										
A. Mineral Products										
B. Chemical Industry										
C. Metal Production										
D. Other Production										
E. Production of Halocarbons and SF$_6$										
F. Consumption of Halocarbons and SF$_6$										
G. Other										
3. Solvent and Other Product Use										
4. Agriculture										
A. Enteric Fermentation										
B. Manure Management										
C. Rice Cultivation										
D. Agricultural Soils										
E. Prescribed Burning of Savannas										
F. Field Burning of Agricultural Residues										
G. Other										
5. Land-Use Change and Forestry										
A. Changes in Forest and Other Woody Biomass Stocks										
B. Forest and Grassland Conversion										
C. Abandonment of Managed Lands										
D. CO$_2$ Emissions and Removals from Soil										
E. Other										
6. Waste										
A. Solid Waste Disposal on Land										
B. Waste-water Handling										
C. Waste Incineration										
D. Other										
7. Other (please specify)										
Memo Items:										
International Bunkers										
1. Aviation										
2. Marine										
Multilateral Operations										
CO$_2$ Emissions from Biomass										

TABLE 10 EMISSION TRENDS (HFCs, PFCs and SF_6)

Year:

(Sheet 4 of 5)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[1]	1990	1991	1992	1993	1994	1995	1996	1997	1998
	(Gg)									
Emissions of HFCs[2] - CO_2 equivalent (Gg)										
HFC-23										
HFC-32										
HFC-41										
HFC-43-10mee										
HFC-125										
HFC-134										
HFC-134a										
HFC-152a										
HFC-143										
HFC-143a										
HFC-227ea										
HFC-236fa										
HFC-245ca										
Emissions of PFCs[2] - CO_2 equivalent (Gg)										
CF_4										
C_2F_6										
C_3F_8										
C_4F_{10}										
$c\text{-}C_4F_8$										
C_5F_{12}										
C_6F_{14}										
Emissions of SF_6[2] - CO_2 equivalent (Gg)										
SF_6										

Enter information on the actual emissions. Where estimates are only available for the potential emissions, specify this in a footnote.

Note: In this row the emissions are expressed as Gg equivalent emissions in order to facilitate data flow among spreadsheets.

TABLE 10 EMISSION TRENDS (SUMMARY)
(Sheet 5 of 5)

Year

GREENHOUSE GAS EMISSIONS	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998
	CO_2 equivalent (Gg)									
Net CO_2 emissions/removals										
CO_2 emissions (without LUCF) [1]										
CH_4										
N_2O										
HFCs										
PFCs										
SF_6										
Total (with net CO_2 emissions/removals)										
Total (without CO_2 from LUCF) [1]										

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year	1990	1991	1992	1993	1994	1995	1996	1997	1998
	CO_2 equivalent (Gg)									
1 Energy										
2 Industrial Processes										
3 Solvent and Other Product Use										
4 Agriculture										
5 Land-Use Change and Forestry										
6 Waste										
7 Other										

[1] The information in these rows is requested to facilitate comparison of data, since Parties differ in the way they report CO_2 emissions and removals from Land-Use Change and Forestry.

Net emissions

TABLE 11 CHECK LIST of REPORTED INVENTORY INFORMATION[1]

Party: **Year:**